Agricultural Cluster Assessment

Shasta and Butte Counties

September 2017

PUBLIC REPORT

Identifying information and details have been redacted from this report

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Introduction

The following report is a record of the work undertaken by the project team from March 2016 through July 2017. Due to circumstances that are described in detail below, the outcome of the work is a summary of insights and guidance rather than a robust business case analysis of agricultural cluster models for Northern California producers. These insights were gathered through meetings and interviews with a few stakeholders in the region and secondary research conducted directly by New Venture Advisors – as well as perspectives shared only verbally by the local project leader, Fred Schluep, based on meetings and interviews he reportedly conducted with additional stakeholders. It was the local project leader's preference to take responsibility for conducting the detailed primary research needed for business case analysis. This research was not completed; therefore, this report is only a summary of the work undertaken and must not be used as the basis for making decisions to establish a cluster enterprise model in Northern California.

Of additional background importance is that the agricultural cluster concept itself was proposed by the local project team as the framework for this study, not the result of comprehensive qualitative and quantitative research to identify needs and opportunities in the Northern California food system. It could be that a truck picking up from a group of area farms irrespective of what they grow (whether organic veg or something else – with appropriate separation it does not matter) is as beneficial as a cluster organization for a specific crop.

For these reasons, not only should the insights and guidance in this report be treated as a matter of record only, but also the cluster concept as a potential enterprise model should be re-examined through careful feasibility assessment and business case analysis.

Process Overview

Summary

This project began as a comprehensive feasibility study examining food aggregation and distribution solutions in Far Northern California. Two significant changes in course occurred as the project unfolded, eventually leading to two distinct phases of work, and a substantial revision to the second phase.

The first major change in course was a strategic shift in the summer of 2016 away from the food hub concept. According to SRTA, several factors contributed to an arguably pre-mature jump to the food hub concept: 1) the North State Transportation for Economic Development Study (2012) identified the absence of an intermodal hub as a major competitive disadvantage to local industry; 2) the concept of a food hub was presented as a business model with successful outcomes in other regions at the 'Building a Fruitful Future' planning session (March 2014) hosted by Growing Local and Superior California Economic Development; 3) recent transportation infrastructure improvements at the Deschutes Road/Interstate 5/Union Pacific Railroad interchange, together with the city of Anderson's incorporation of adjacent underutilized vacant industrial land, made for an ideal physical location; and lastly, 4) the food hub concept was shortlisted by the State of California as a potential sustainable freight pilot project eligible for technical assistance and possible grant funding.

Unfortunately, the food hub did not make the state's final cut as a pilot project and initial secondary research indicated that agricultural production levels are yet insufficient to justify and bricks-and-mortar facility. Additionally, when local industry stakeholders were contacted during the initial outreach phase, many were wary of the hub's impact on their respective operation and reticent to share proprietary information needed by NVA to develop a rigorous business case for a food hub. Three advisors to the project became concerned that the surveys and direct outreach were having a negative effect, causing producers to pull away from attempts to enlist their feedback. As a result, project partners reassessed the project direction and advocated for refocusing the study on cluster development. The vision was that cluster development could help build the volumes necessary to make transportation more cost and energy efficient.

An amended scope of work, focusing on the development of agriculture clusters (rather than the food hub) was approved by the grantor and the SRTA Board of Directors in December 2016. Together with SRTA and Fred Schluep, NVA carried out the Phase II work plan, with a focus on an evaluation of up to two agricultural clusters in a more concentrated geographic area covering three of the original eight counties.

The second major change in course occurred during the summer of 2017 when it became clear to the project team that a local organization was already developing the exact cluster strategy under exploration in Phase II. The work plan then refocused on developing a business case for this organization, provided they were willing to share the necessary business information with the project team, enabling NVA to conduct operational and financial analysis to develop the business case.

A deadline of July 27, 2017 was established for this information to be provided. It was agreed by the project team that if no or insufficient information was provided by this date, the project would again refocus and conclude with a report summarizing the work completed. The deadline passed with no response.

SRTA authorized NVA to write up the overall process, steps and decisions made throughout the project – noting that this organization is likely to be running a version of a cluster model for organic veg going forward – incorporating secondary research conducted throughout the study, and as feasible, some degree of a transportation assessment.

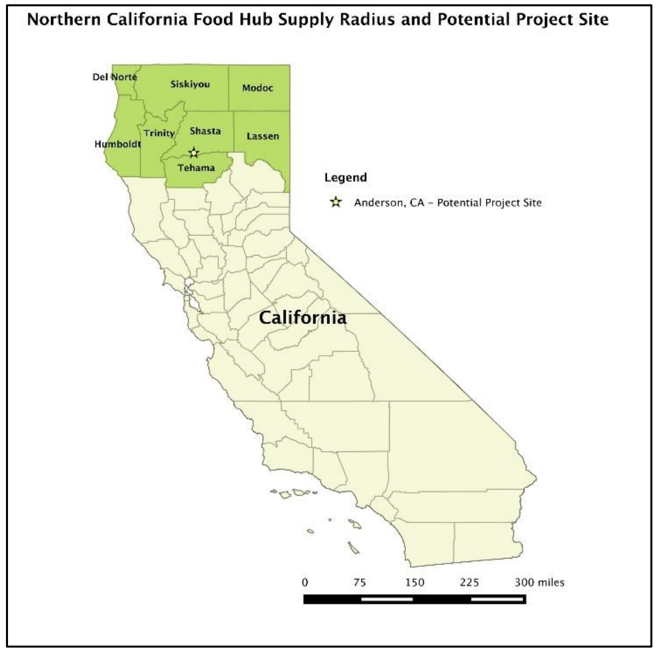
This report is the final write-up and deliverable. New Venture Advisors does not make business recommendations on secondary research alone; therefore, the following report is focused on process and research – as well as steps that could be taken to further investigate development of a cluster enterprise model – rather than specific implications and recommendations for a business entity.

Phase I: Food Hub Market Assessment and Feasibility

Shasta Regional Transportation Agency (SRTA), Superior California Economic Development (SCED), and Growing Local formed a partnership in 2015 to explore the feasibility of a centrally located hub to address the California North State economy's lack of intermodal infrastructure for aggregation, wholesale, and distribution of regional commodities. SRTA secured a 'Strategic Partnerships' planning grant from the California State Department of Transportation (Caltrans) to support the group's efforts. New Venture Advisors, a business advisory firm specializing in local food systems development, was selected by the group to conduct a feasibility study, develop a business plan, and deliver a demonstration project from 2016-2017.

The prospective hub was intended to serve regional growers and producers of agriculture-related commodities in the eight northernmost counties that comprise the California North State economy, increasing their market access by facilitating sales and distribution, and potentially providing packing, processing, technical assistance, and other services.

These counties are shown in green on the map to the right: Del Norte, Siskiyou, Modoc, Humboldt, Trinity, Shasta, Lassen, and Tehama. The vision was that a hub would support regional wholesale buyers of local agricultural products by aggregating supply and supporting inbound distribution. By optimizing and increasing the flow of regional commodities, a new hub would have driven positive economic and employment impact within the region.



The hub also aimed to reduce greenhouse emissions and more efficiently utilize California’s intermodal freight corridors by reducing ‘food miles traveled’ between production and wholesale. Additional desired co-benefits included greater food security, access to healthy food, and climate change resiliency.

When the project commenced, the project team included:

- Shasta Regional Transportation Agency (SRTA): Dan Wayne, Senior Planner; Dave Wallace, Chief Fiscal Officer
- Independent consultant: Fred Schluep
- Advisor: Steven Sibilsky, CEO at OurSmartFarms
- SCEDD: Loree Byzick, Special Projects Manager

The following project plan was originally agreed upon by the project team. The original work plan assumed the project launched in March 2016 and would be completed in Q2 of 2017.

1. Project initiation and agree upon project goals
2. Secondary research
3. Interviews
4. Surveys
5. Site visit
6. Transportation data and modeling
7. Synthesis and recommendations
8. Operator-broker selection
9. Business plan development
10. Site assessment
11. Demonstration project, with site visit
12. Final report

As Phase I evolved, and was eventually halted, the following steps were ultimately completed.

1. Project initiation, executed in March of 2016. This time was spent aligning on project objectives, with the entire project team, organizing preliminary interviews, and preparing for an in-person community kickoff meeting.

2. Preliminary interviews were conducted in April 2016 with 10 stakeholders, including five producers, two buyers, and three food systems advocates. Trends and insights from these interviews helped shape both the in-person kickoff meeting material and the content and structure of grower and buyer surveys.
3. Secondary research was conducted in April of 2016, and refined through May and June based on feedback from the project team and other stakeholders. As part of this step, previously conducted primary research were reviewed and incorporated.
4. In-person project kickoff, held on May 11, 2016. Originally, this meeting was intended to be a major site visit, with a community kickoff and in-person interviews with key grower and buyer stakeholders. Early on, the team found it difficult to generate enthusiasm and high attendance to the kickoff, and was not well positioned to prioritize in-person interviews. As such, New Venture Advisors and the project team made the decision to plan for two site visits – the first being an in-person community kickoff to set a strong foundation for the project's primary research steps and the second a "road show" to be executed mid-summer, after survey results were gathered. Through the road show, New Venture Advisors would visit with important producers, food hubs, buyers and transportation providers through the Far Northern region of California.
5. Grower and buyer surveys were developed, finalized and disseminated from May 2016 through July 2016. Nineteen producers and ten buyers responded to these surveys.
6. A road show was planned for August 8 – 12, 2016, with producers and food hubs across the region lined up for in-person visits. This road show was canceled in July of 2016.

In August of 2016, SRTA and the project team decided to halt the project due to concern that it was on the wrong path. More specifically, that the study was narrowly focused on the development of a brick & mortar food hub and that the project plan above was not effective in engaging producers.

In closing out the project, New Venture Advisors provided SRTA with the following deliverables.

- Far Northern CA Food Hub Secondary Research Technical Memo (May 2016)
- Stakeholder Outreach Summary, which included a full list of all stakeholders engaged and contacted throughout the study, and a summary of important insights gathered from each (November 2016)
- Raw data from the buyer and grower surveys (November 2016)

Phase II: SRTA Cluster Development

In January of 2017, SRTA and NVA reengaged and developed an updated scope of work to complete the project.

The new objective was to present a business case for a potential funder to invest in the development of two identified agricultural clusters (with a focus on Shasta and Butte counties), based on their ability to be financially solvent and generate social and/or environmental benefits. That products will be aggregated in Sacramento and sold south of Sacramento was a key assumption to be maintained throughout the project. Each cluster would be collective group of "ag of the middle" growers of a specific crop. "Ag of the middle" was defined as a farmer making less than $250,000 in revenue annually, but who is not a hobby farmer. The "entities" being studied were the two independent clusters. The inbound hypothesis was that aggregation services would be outsourced to Sacramento Food Bank or a regional equivalent and transportation services would be outsourced to General Produce.

The project team was refined to include:

- Shasta Regional Transportation Agency (SRTA): Dan Wayne, Senior Planner; Dave Wallace, Chief Fiscal Officer
- Independent consultant: Fred Schluep

Given the nuance and sensitivities of relationships with and between growers, distributors, food banks and buyers, it was determined that the local project leader would coordinate and execute all on the ground research. This included surveying growers, facilitating meeting scheduling with key stakeholders (including the food bank and General Produce), and coordinating local elements of the site visit.

The following project plan was agreed to in January 2017 by the project team. The third column in the below table describes if and how each step evolved as the project unfolded.

Step	Approved Work Plan	Status
Project Initiation	• Finalize scope of work and contract [NVA, Fred and SRTA]	Completed in January 2017.
Cluster Identification	Narrow to two clusters • Develop framework for cluster selection [NVA, Fred to approve] • Identify 5 clusters for consideration [Fred] • Assess 5 clusters based on framework to narrow to 2 [NVA, Fred supports by facilitating any introductions for interviews that would be valuable] • Present and then agree upon prioritized two clusters [NVA presents; Fred and SRTA make final decision]	NVA was asked to research three potential clusters – stone fruits, organic vegetables and wild rice. Through secondary research, wild rice and organic vegetables emerged as the top clusters to pursue.
Producer Research	• Analyze and synthesize objectives, methodology and findings from the University of Tennessee transportation study. Describe the implications of these findings on growers and the food system in Shasta and Butte counties. Write up an overview to be used to compel growers (and other partners) to engage in this study. [NVA] • Develop primary research instruments, or simply a set of data that we need on each cluster [NVA] • Collect this information from growers [Fred] • Conduct in-person group meetings with select growers in each cluster [NVA leads/facilitates, Fred and his team participate and invite/organize any logistics] • Organize and codify research [NVA] • Analyze and synthesis data [NVA]	University of Tennessee Study synthesized in February. See Appendix B for write up. Primary research instruments developed in March 2017 (see Appendix C for data collection tool). Local project leader indicated that meetings were conducted with various growers, but did not use these tools or collect data in a way that allowed for comprehensive business case analysis. A site visit was planned for June 2017, but was cancelled for reasons detailed below. In July 2017, it was determined that NVA would connect directly with producers in order to collect as much information as possible. Introductions were made to four organic producers, all of which were interviewed. No introductions were made to wild rice producers, so this group was not interviewed.

Step	Approved Work Plan	Status

Demand / Distribution Research	Identify the “tipping point” that needs to be met in terms of product volume. Determine the cost of distribution. Determine the price point that growers would receive and the optimal pricing strategy.
	• Follow up with General Produce two more times [NVA]
	• If General Produce does not confirm interest, focus on hunger relief organizations.
	    ○ Preliminary phone meeting to gauge interest, understand infrastructure and determine buyer relationships in Bay Area [NVA, Fred to facilitate / organize meeting]
	    ○ Convene during site visit (tour of their facilities, engage in larger in-person meetings)
		Three attempts were made to connect with General Produce. During one short phone call, NVA was told that they had no background on this project, and to email them to schedule a call. In March, local project leader determined to cease efforts to pursue them as a partner.
		
		One hunger relief organization emerged as a high potential partner. They have met with local project leader; however, NVA was not able to secure an interview with them after four attempts (via email and phone).
		
		Other organizations emerged as *potential* partners, but information was not gathered on them because the project shifted in scope as described below.
		
		Site visit was cancelled for reasons detailed below.

Determine Sacramento Aggregation Points	Determine strategy / pricing / cost of sub-aggregation, distribution between these points and Sacramento, and aggregation within Sacramento. • Sub-aggregation points to be determined based on mapping of producer research, interviews / site visit with producers, identification of third party sub-aggregation options, and application of the findings from UT research. [NVA to develop first cut at map; SRTA resources may be engaged to flesh these out further] • If interested, conduct site visit and interviews to understand needs, constraints, requirements, pricing, etc. If not interested, identify an alternative option. [NVA leads, Fred participates as local leader] • Develop full map of forecasted aggregation and distribution [NVA, SRTA support as appropriate] • *Note that if analysis is needed to compare current transportation with transportation and distribution that would result from these clusters being developed, this would be conducted by SRTA.*	This step was not executed given the limited level of data that was gathered on supply, demand and distribution.

Step	Approved Work Plan	Status
Site Visit	Two full days onsite to touch on all of the above. Site visit may also include meeting with funders and transportation funders to gather input. Likely agenda will include: • Convening of wild rice growers • Convening of organic veg growers (including potential growers in cluster) • Broader meeting with SRTA, state representatives, rail representatives, food banks, key representative growers, and others [NVA and local team on site, Fred handles local scheduling]	This step was canceled given the local project leader's lack of confidence that producers, buyers and distributors would attend such a meeting. In lieu of a site visit, NVA agreed to conduct 1-1 interviews with as many producers, buyers and distributors as possible, with introductions to interviewees made by Fred. All stakeholders that NVA was introduced to were interviewed.
Business Model Development	Synthesize all of the above research, and in particular, the site visits and interviews with lead growers in each cluster described above to develop operating models for both clusters [NVA recommends; Fred and SRTA confirm and engage local growers as appropriate]	Given the limited level of data gathered on supply, demand, and distribution, the strategic development of a business model was infeasible. As part of NVA's interviews, a nonprofit emerged as an organization developing a "cluster model" for organic vegetable production. At this point, the decision was made to establish the financial business case for this organization's vision as part of this step. On July 24, NVA provided this nonprofit with a list of data needed to conduct a business case assessment. No response was received. On July 28, SRTA determined that the final deliverable would be largely a secondary assessment of the two potential clusters – wild rice and organic vegetables – rather than continuing to pursue this organization as a private sector partner to advance a cluster initiative in collaboration with SRTA and other state agencies.
Financial Forecasts	Develop assumptions and build forecast for each cluster • Draft assumptions [NVA] • Review and finalize assumptions [Fred, SRTA] • Draft financials [NVA] • Review and give feedback [Fred, SRTA] • Finalize financials [NVA]	
Business Case and Recommendations	Develop written explanation of the research findings leading to the business model selection, and financial projections for the chosen model • Draft recos [NVA] • Review and finalize [Fred, SRTA]	

Step	Approved Work Plan	Status
Final Deliverable	Deliver final report: • Detailed written summary of the above, and incorporating SRTA's contributions as noted in "Deliverable Based Scope for NVA" document [NVA drafts, Fred/SRTA give feedback, NVA finalizes] • Final presentation to SRTA and project partners [NVA presents via teleconference, Fred/SRTA/other partners schedule and participate]	Completed with this document.

Preliminary Cluster Research

In early 2017, the project team provided NVA with three potential clusters to be researched – stone fruits, organic vegetables and wild rice. The local team flagged other clusters of interest but ultimately decided against having them be a focus for research of next steps. These clusters included dairy / creamery, oriental vegetables, and nursery crops.

Wild rice emerged from this preliminary research as the most promising cluster. Overall volumes of wild rice production are high and while they are declining across the entire state, it remains quite high in Shasta County. A formal cluster could bring resources and infrastructure to the region's farmers, helping them improve production costs, access to markets and gain market power with their single, main buyer.

Organic vegetables had some promise, although secondary research raised important concerns, including (1) the viability and cost structure of organic veg production in Shasta County, (2) uncertainties on demand and likely price point / premium expected for organic and (3) the seeming importance of developing a strong brand – a strategy that is very risky and expensive. Ultimately, however, the project team decided to move forward with organic vegetables as one of the two clusters to prioritize.

Stone fruits appeared to have the least potential as a cluster. Appendix A provides detail on stone fruit research for future reference, including current production levels, demand and current supply chain configuration.

The team decided to prioritize wild rice and organic vegetables as the top potential clusters to further research and vet for the remainder of the project.

The following table summarizes the opportunities, challenges and recommendations from this preliminary research step.

	Wild Rice	Organic Vegetables	Stone Fruits
Potential benefits an organized cluster could bring to producers in the category	• Collectively organizing farmers to help them gain access to water and land • Access to processing, a key step in the wild rice supply chain • Creating products (such as cooked wild rice blends for quick foodservice) • Improve producer power with buyers. Input from one grower suggests that Riviana Foods is currently exerting significant pressure on production and pricing trends of wild rice. • Marketing and market development	• Technical assistance, including support with the transition from conventional to organic and identification of optimal crops to grow in the region • Access to wholesale markets to diversify their sales beyond farmers markets and CSAs • Post-harvest, including sorting, washing, packaging and transporting / storage of organic vegetables • Determine whether or not to pursue a branding strategy and if so, funding and executing on this approach	Helping the smaller stone fruit producers in Butte, Tehama and Shasta counties: • Access major markets • Build a "local" stone fruits brand, which some experts suggest there is market potential for • Access cleaning, sorting and packing functions of a packing house (that the vertically integrated grower-shipper operations of the Central Valley enjoy) • Pursue the right stone fruits based on demand, supply, pricing and climate
Primary concerns about a potential cluster for this category	• Concern that a new, emerging cluster for wild rice would compete with existing entities such as the Fall River Wild Rice Cooperative • The region has seen a decline in wild rice production recently. It is not known if this is driven by factors a cluster can address (i.e. access to markets, access to processing, etc.) or that are outside a grower or cluster's control (i.e. falling demand, new challenges in actually growing wild rice in the region, etc.).	• Viability and cost structure of organic vegetable production in the region. Current production levels are extremely low, begging the question whether this is driven by characteristics of the land / climate, or because growers in the region lack access to knowledge or markets. • Competition from other, particularly central, regions in California wherever certified organic production is abundant • Price premium exists, but it is extremely volatile and risky • The importance of grocery stores as buyers and demand drivers. Existing production volumes are unlikely to satisfy retail customers, and these types of buyers would seek strong packaging design.	• Compared to San Joaquin Valley, production trends in Butte, Tehama and Shasta counties are extremely low • Stone fruit production is already declining across California (particularly in the San Joaquin Valley). This reflects both production and demand challenges. • Demand challenges: In recent years, supply has outstripped demand – leading to lower box prices and the elimination of some grower-shippers • Supply challenges: Climate change and decreases in winter chilling time have led to lower levels of production. This trend is most predominant in San Joaquin Valley but is anticipated to affect Far Northern California over time.

	Wild Rice	Organic Vegetables	Stone Fruits
Immediate questions to pursue if this cluster is prioritized	• How are growers currently engaging with existing entities in the supply chain – including processors (such as Gibbs), cooperatives (such as Fall River), and associations (such as the California Wild Rice Advisory Board)? • Do companies like General Produce see opportunities on the demand side for wild rice? • How costly is it to establish this cluster and invest in the necessary infrastructure to support the cluster – such as processing and storage facilities?	• Demand and pricing: Are buyers seeking more certified organic vegetables and if so, what are the looking for? What is their pricing structure for these products? • Cost of organic vegetable production for farmers, including cost of transitioning to certified organic in the region, and yield for different crops • Input from growers in the county on their interest levels and concerns associated with transitioning	• Potential market to develop a brand around local/small orchard stone fruit, given that the vast majority of California stone fruits is grown by grower-shipper / massive orchards • Understand how the smaller orchards in Butte, Tehama and Shasta counties are packing, distributing and selling their fruit. What challenges are they facing? What are the opportunities they see for improved operations, pricing and market access? • What opportunity is there for increased production of stone fruits in these counties? Are growers interested / willing to expand production? To what degree (if any) are these growers feeling the climate change concerns cited by our research? • Organic data is limited, so gaining an understanding of organic stone fruit production and demand could be valuable

After wild rice and organic vegetables were prioritized as the top two potential clusters to move forward in this research, the local project leader began engaging growers through informal meetings (informal in that the meetings appeared to have been used to gauge baseline interest in cluster development and not to gather consistent, comprehensive data for business case analysis). Early on, meetings with wild rice producers were favorable, and the local team believed there was promise in this cluster. However, over time, two key wild rice producers became less engaged with the local project leader. Given this, as the project unfolded, organic vegetables took priority as the main cluster of focus.

The remainder of this document describes research, insights and potential next steps for these two clusters – wild rice and organic vegetables.

Organic Vegetables

Agricultural Production

Note: The focus of Phase II is Butte and Shasta Counties only; however, the project team requested that Tehama be included as part of research on organic vegetable production.

California leads the nation in agriculture, representing 47 percent of the U.S. harvested vegetable acres. The state has 25.4 million acres of agricultural production, of which 688,000 (2.7%) acres is organic, across 2,805 organic farms (USDA - National Agricultural Statistics Service Homepage 2016). Of the state's 1.2 million acres of produce production, 15% is certified organic, compared to the U.S. overall, in which 6% of produce production is certified organic (USDA 2016).

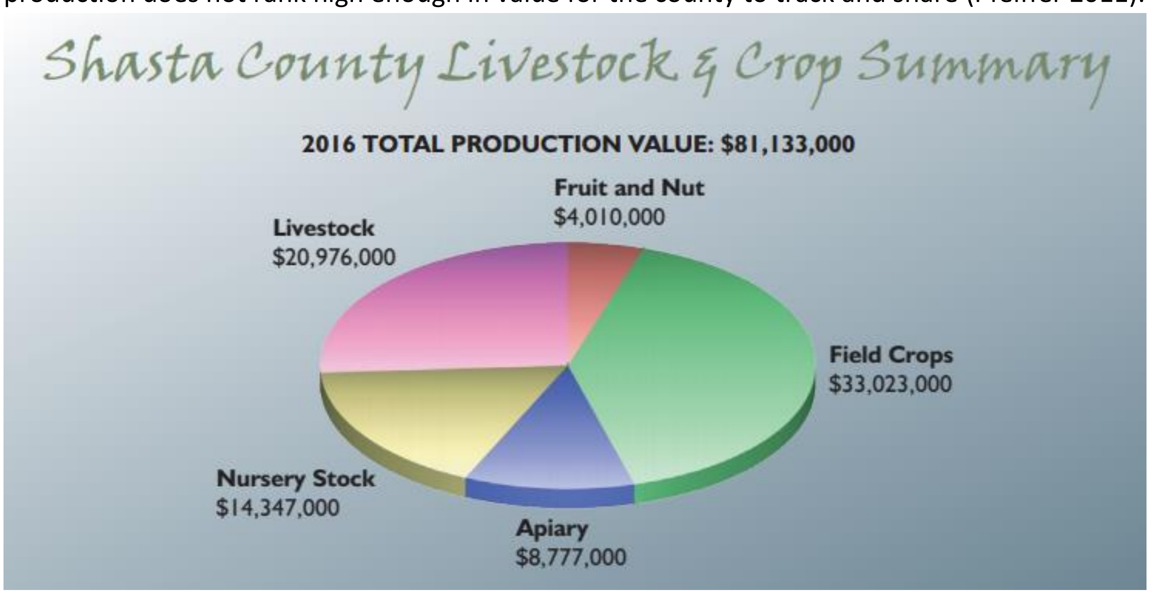
One major advantage California has in organic production is that pest pressures are less severe than in other states, which reduces the work and costs associated with managing pests with organic methods. In addition, California is the only state in the country with an approved State Organic Program. The state program is responsible for enforcement of the Organic Foods Production Act of 1990 and the California Organic Products Act of 2003. It is enforced by the California Department of Food and Agriculture (CDFA) for organic producers and the California Department of Public Health (CDPH) for processed organic products.

Organic vegetable production in the state is highly concentrated. Nine counties represent over 90% of the state's organic vegetable production in 2012, (Kern, Monterey, San Benito, Ventura, Santa Barbara, Imperial, Fresno, Yolo, San Luis Obispo) and two alone (Kern and Monterey) represented 62% (USDA - National Agricultural Statistics Service Homepage 2016).

Agricultural Production in Northern California

Shasta, Butte and Tehama Counties have over 100,000 acres of land in agriculture. Vegetable production represents a very small fraction of agricultural productivity in these counties.

- Shasta's primary crops are Wild Rice, Hay, Grass and Walnuts. The county's reports do not indicate any concrete information on levels of vegetable production, suggesting that vegetable production does not rank high enough in value for the county to track and share (Pfeiffer 2011).



- Butte's primary crops are Walnuts, Almonds, and Rice. Of the county's total $772.6 million in farm gate sales, $1.7 million is from vegetables (Mendoza 2015).
- Tehama's primary crops are Walnuts, Almonds, and Olives. Of the county's total $335.9 million in farm gate sales, less than $0.5 million was likely from vegetables (Ross 2015).

Across these three counties, a very small percentage of production is certified organic, although for Butte County, this percentage is increasing.

2012 Agricultural Production (NASS 2017)

County	Total Sales	Organic Sales	% Organic
Butte	$294,999,100	$491,256	0.167%
Shasta	$77,241,000	$15,173	0.020%
Tehama	$294,999,100	$12,142	0.004%
TOTAL	**$667,239,200**	**$518,571**	**0.078%**

2016 Agricultural Production (NASS 2017)

County	Total Sales	Organic Sales	% Organic
Butte	$772,639,884	$21,930,572	2.838%
Shasta	$81,133,000	n/a	n/a
Tehama	$335,919,900	n/a	n/a
TOTAL	**$1,189,692,784**	**n/a**	**n/a**

Butte County Agricultural Production (Mendoza 2015)

Year	Total Sales	Organic Sales	% Organic
2012	$711,856,000	$9,515,000	1.34%
2013	$861,302,161	$13,448,637	1.56%
2014	$802,265,860	$15,935,500	1.99%
2015	$758,911,212	$21,930,572	2.89%

The below charts provide some detail on the number of organic growers and acreage in Northern California counties, with Shasta, Butte and Tehama counties highlighted.

Number of Organic Growers (California Legislative Information 2016)

County	2009	2010	2011	2012	2013	2014	2015	2016
Lassen	n/a	n/a	n/a	4	n/a	n/a	n/a	n/a
Modoc	14	14	13	23	n/a	n/a	n/a	n/a
Shasta	22	22	24	27	22	n/a	39	40
Siskiyou	36	34	37	39	n/a	n/a	n/a	45
Butte	48	51	51	56	77	73	92	n/a
Sutter	30	29	31	31	34	n/a	36	n/a
Tehama	22	19	23	21	28	27	34	30

Organic Acres (California Legislative Information 2016)

County	2009	2010	2011	2012	2013	2014	2015	2016
Lassen	n/a	n/a	n/a	13,082	n/a	79,211*	88,330*	n/a
Modoc	5,340	4,993	12,964	15,114	n/a	n/a	n/a	n/a
Shasta	2,026	1,626	1,470	1,552	9,850	n/a	11,543	10,672
Siskiyou	44,606	45,469	53,756	54,548	n/a	n/a	n/a	n/a
Butte	13,757	14,885	15,405	16,519	15,269	16, 673	10,868	n/a
Sutter	9.343	10,246	10,339	10,799	12,302	10,723	10,336	n/a
Tehama	12,290	12,164	12,433	11,438	11,970	36,575	36,847	80,089

The above data illustrates that while organic production and vegetable production both are steadily rising across these three counties, the current level of *organic vegetable* production is quite low.

The most recent county-level data on organic vegetable production is from 2007. At that point, the three counties logged just 50 acres of certified organic vegetables. This represents 0.24% of the entire state's organic vegetable production.

Summary of Certified Organic Vegetable Production in Butte, Shasta and Tehama Counties

County	Sales $	% of Total	Acres	% of Acres	Growth in Sales 2002-2007	Growth in Acres 2002-2007
Butte	491,256	0.22%	39	0.11%	444%	74%
Shasta	15,173	0.01%	9	0.02%	42%	-50%
Tehama	12,142	0.01%	2	0.00%	-41%	-58%

Organic Production Costs and Challenges

As the above illustrates, current organic vegetable production in Butte, Shasta and Tehama Counties is very low. If demand trends suggest that additional supply of organic produce is needed in the market, this may present an opportunity for a newly developed cluster to encourage and support growers to transition into certified organic production.

This type of effort requires an understanding of the economic and operational challenges a farmer might face in this type of transition.

Costs and Challenges of Organic Production

Production costs. One important consideration is the cost farmers incur adhering to organic production standards. Before making the transition, most farmers assume their operating costs would be significantly higher, to replace synthetic fertilizers and pesticides with certified counterparts and increased labor.

However, studies have shown that once a farmer has transitioned to organic, their ongoing costs of production are only slightly higher than conventional production. UC Davis studies have shown the that operating costs per acre for organic broccoli are about 8% higher than conventional, and for organic leaf lettuce are almost equal to conventional (K. Klonsky 2011). A 2015 meta-analysis about the economics of organic farming, published in the journal Proceedings of the National Academy of Sciences (PNAS), also found that total, variable, and fixed costs for organic weren't that different from conventional (Crowder June 2015). Labor costs were typically 13% higher for organic, but those costs were offset because organic required fewer nonrenewable resources and purchased inputs, such as synthetic fertilizers and pesticides.

It is important to note that most of the above research is typically conducted on large scale, specialized farmers (rather than smaller scale, diversified farmers). Additionally, the UC Davis research was on farms in the Central Coast.

Therefore, more localized research must be conducted to determine the specific cost of organic production in and around Butte, Shasta and Tehama counties, given the region's unique climate, soil quality, and access to labor and water.

Cost of certification and transition. Certification is the main, direct costs of transitioning to organic. California Certified Organic Farmers (CCOF) certification and inspection fees are described below. This does not include the cost of the agent's travel and time, which is typically a separate and additional fee.

CCOF Organic Certification Services Fee Schedule (all amounts in US dollars)			
Organic Production Value (OPV)		Fee	
At Least	Not More Than	Crop/Livestock	Handler/Processor
$0	$10,000	$240	$725
10,000	20,000	340	725
20,001	50,000	425	725
50,001	100,000	625	725
100,001	200,000	725	825
200,001	300,000	875	875
300,001	400,000	1,050	1,050
400,001	500,000	1,300	1,300
500,001	600,000	1,800	1,800
600,001	700,000	2,025	2,025
700,001	1,000,000	2,625	2,625
1,000,001	1,500,000	3,850	3,850
1,500,001	2,000,000	4,500	4,500
2,000,001	2,500,000	5,125	5,125
2,500,001	3,000,000	5,700	5,700
3,000,001	3,500,000	6,350	6,350
3,500,001	4,000,000	7,150	7,150
4,000,001	5,500,000	8,550	8,550
5,500,001	10,000,000	12,125	12,125
10,000,001	25,000,000	19,675	19,675
25,000,001	50,000,000	23,625	23,625
50,000,001	75,000,000	27,250	27,250
75,000,001	100,000,000	31,500	31,500
100,000,001	125,000,000	35,425	35,425
125,000,001	150,000,000	39,000	39,000
Greater than 150,000,000		42,525	42,525

$425	Minimum fee for mixed organic and non-organic (all types, all crops).
$625	Minimum fee for livestock operations with greater than 10 mammals or 200 poultry.
$825	Minimum fee for clients outside of the 50 United States.
$42,525	Maximum fee

The USDA has two major cost-share programs available to farmers transitioning or adopting organic. The National Organic Certification Cost Share Program (NOCCSP) and the Agricultural Management Assistance (AMA) Organic Certification Cost Share Program were both established to help defray the cost of certification. Through either program, farmers are eligible for reimbursement up to 75% of their annual certification costs. Many farmers, however, are not aware of the available funding. Only half of organic farmers participate in the program, which means that nearly half of the available $11.5 million allocated annually as stipulated in the 2014 Farm Bill has gone unused. One survey by the Organic Trade Association (OTA) revealed that 200 of 500 (40%) organic producers and handlers hadn't even heard of the cost-share assistance.

Indirect cost of transition period. The more onerous costs of transition are not as direct as the certification costs. During the transition process (at least three years before crops can be considered organically certified), growers often experience reduced yields which return to previous levels after 3-5 years. During this time, growers have production costs of a certified organic farmer, but are not yet able to reap the price premiums associated with certification.

Two types of resources exist to support growers through the transition period.

First is the CCOF Certified Transitional Program, which allows growers to certify that they are transitioning and can therefore look for some price premium above conventional produce. In January 2017, the USDA and the OTA also launched a National Certified Transitional Program (NCTP) to help standardize the various transitional offerings. The NCTP offers a list of approved vendors, or certifiers, that farmers can look to for the intermediary accreditation. Certified transitional doesn't come with a grocery shelf label but it does enable farmers to use it as recognition in negotiations with buyers.

Second is financial support. This can come in the form of a grant, such as the USDA's Value Added Producer Grant, or equity or debt funding, such as Farmland LP – a REIT that purchases conventional farmland and converts it to organic. Other funds, such as Vilicus Capital, invest in farmers (with farmers maintaining ownership of their land) for a revenue or profit share.

Paperwork. While cost of transition and lack of immediate access to markets are two of the main barriers holding growers back, regulatory problems have also been cited as a key production challenge for organic farmers in California and in the U.S. (Klonsky, 2010).

In a survey of 900 organic farmers in California in 2014, 36% cited regulation as the primary production challenge (NASS, 2016). These include paperwork and record-keeping for certification, inspections, finding a certifier, and the cost of certification.

Storage and post-harvest requirements. Under organic production, growers harvest and market their produce at or near peak ripeness more commonly than in many conventional systems. However, organic production often includes more specialty varieties whose shelf lives and shipping traits are reduced or even inherently poor (Suslow, n.d.). Additionally, many of the chemicals that are commonly associated with post-harvest cooling and washing (such as chlorine or pH adjustment substances) are prohibited, and organic farmers and handlers must find natural, acceptable alternatives. All of this can make the post-harvest handling, washing and packing, storage and even distribution steps for organic more expensive than conventional counterparts.

Yields. Another concern farmers have when considering a transition from conventional to organic is that yields often decrease. A meta-analysis of 115 studies, conducted by the Berkeley Food Institute in 2014, found that organic yields are about 19.2 percent lower than conventional ones. This same study illustrated two agricultural practices, multi-cropping (growing several crops together on the same field) and crop rotation, that reduce the organic-to-conventional yield gap to 9 percent and 8 percent, respectively.

Benefits of Organic Production

Despite the above challenges, farmers who make the transition typically find the results worthwhile.

A 2015 meta-analysis about the economics of organic farming, published in the journal *PNAS,* found that overall organic is more profitable than nonorganic because the price premiums consistently offset the additional costs of certification and production. After reviewing 129 studies and analyzing 55 crops, the report determines that on average organic prices were 29-32% higher than conventional crops (Crowder June 2015). More importantly, organic produce only needed to secure a 5-7% price premium to make it as profitable as conventional production, despite the fact that yields of organic production were found to be 10-18% lower than conventional (Crowder June 2015).

The study found that with current price premiums, organic crops were 22-35% more profitable than conventional (Crowder June 2015).

Producer Data from Primary Research

At the start of Phase II, it was assumed that the project team would survey and gather detailed data on producers within each cluster, using the guidance provided (Appendix C). This information could not be gathered. As such, NVA spoke directly with four farmers referred by the local project leader, and gleaned additional information on four other current or potential organic vegetable producers through Phase I survey input or feedback from the local project leader.

Note that most of these growers are not "ag of the middle" producers (as was originally stated as a focus area for Phase II).

[TABLE REDACTED TO PROTECT CONFIDENTIALITY OF INTERVIEWEES]

Based on the above direct research, it appears that:

- There are about twelve identified acres of organic vegetable production
- There is up to 75 acres of potential organic vegetable production that could come online in the next year or two. A major variable that could significantly decrease this acreage is in how two of the interviewed producers utilize their existing land. If the focus is on wheat, tree nuts, fruit trees or any other crop besides organic vegetables, immediately accessible organic vegetable growth could be significantly lower than 75 acres.
- Throughout project meetings, the local project leader has indicated that one player likely has access to 200 acres of organic vegetable production. This needs to be researched further, and would likely include fallow land. It is unclear if this player has access to and agreements on 200 acres, or if these are just based on preliminary discussions.

Demand, Pricing and Competitive Landscape

Demand Trends and Buyer Landscape

Consumer demand for organic food has grown by double-digits nearly every year since the 1990s. Organic sales nationwide increased from $3.6 billion in 1997 to $43.3 billion in 2015. The industry has shown continuous and steady growth with a 10.8 percent growth rate in 2015, well above that of the overall food market at 3.3 percent (Organic Trade Association, 2016).

Organic products have shifted from being a lifestyle choice for a small share of consumers to being consumed at least occasionally by a majority of Americans. National surveys conducted by the Hartman Group and Food Marketing Institute during the early 2000s found that two-thirds of surveyed shoppers bought organically grown foods (USDA Economic Research Service, 2016). Consumers prefer organically produced food because of their concerns regarding health, the environment, and animal welfare, and they show a willingness to pay the price premiums established in the marketplace.

New Venture Advisors' *MarketSizer*™ tool estimates California's total demand for local produce to be $9.8 billion. Demand within Sacramento County for local produce is estimated to be $403 million. If nationwide trends related to demand for organic held true in these regions, demand for ***local organic*** produce within Sacramento County would be $52 million – and this number would be climbing each year.

Retailers: Nationwide, the vast majority of organic produce purchases (93 percent) are being made at conventional and natural food supermarkets and chains, according to the Organic Trade Association (OTA). However, the sector has not reached its full potential due to supply often not keeping up with demand.

While retailers were not a major focus of the project team's research, the following grocery stores were identified.

- *Holiday Market / North State Grocers:* Twelve store chain that stocks regionally produced, source-identified product.
- *Raley's:* This 135 store chain (from south of Monterey to the Far Northern counties of the state) was not engaged in either Phase I or Phase II, but they could be an important buyer of local. They have a stated commitment to supporting local growers, supporting sustainable and organic growing practices, and serve local-focused consumers.
- *Tops Market–Redding:* During the Phase I community kickoff site visit, NVA visited and talked with several different people managing departments to see how they market local options. The store did not have that many options and limited marketing around California or regionally produced foods. From research to date, they are unlikely to be a strong potential buyer of local certified organic.

Food Banks and Pantries: While food banks are becoming more relevant players in the local food movement, they typically are unable to pay the price premiums that organic (and organic local in particular) would command through other channels. As such, they would not typically be recommended as an anchor buyer for an organic vegetable cluster.

However, over the course of Phase II, the project team indicated that several food banks in the region are interested in purchasing organic vegetables through this type of cluster, and could support with distribution (see later section for more information on distribution). The following food banks have been mentioned throughout Phase II.

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Distributors: Broad line and specialty distributors move produce to restaurants, institutions, and smaller grocery stores. As such, selling to distributors helps growers, hubs and other suppliers drive high volumes with a partner who can effectively manage logistics and warehousing.

[REDACTED TO PROTECT CONFIDENTIALITY OF INTERVIEWEES]

Other distributors were not engaged, but could be if organic vegetable cluster efforts are pursued. Specifically, Veritable Vegetable, Walker Brothers, Capay Organics, and BC Fresh could be important buyers.

Veritable Vegetable would be a particularly important partner. Veritable Vegetable is a San Francisco based organic produce distributor that purchases, transports and supplies the highest quality organic fruits and vegetables on the market. With over forty years of operations and experience, Veritable Vegetable has already established a strong brand, reputation and set of relationships with growers and buyers of organic produce.

Food service and institutions: Organic vegetable sales into food service is fairly limited nationwide.

There are few programs promoting certified organic food within California schools, although there are some bright spots. In 2015, Sausalito Marin City School District was the first U.S. School district to provide meals that are 100 percent organic and non-GMO. There are also some companies, such as Organic Kids LA, that provide organic packed lunches to kids. The meals span breakfast, lunch, and snacks, and will be served to more than 500 students attending two schools. Revolution Foods, a social enterprise that has taken a large stake in California's school cafeterias, promotes healthy food but does not seem to focus on certified organic. Some hospitals have made initial inroads offering organic meals to patients, but again, this progress is limited.

As such, hospitals, schools and other institutional food service providers are unlikely to be a key buyer for an organic cluster, although relationships may be built over time.

Direct to Consumer: USDA research has found that demand for organic products is strong or moderate in most of the farmers' markets surveyed around the country, and that managers felt more organic farmers were needed to meet consumer demand in many states.

Primary research reinforced these trends, as growers are successfully selling their organic produce through farmers markets and CSAs, at a premium price point. For example, one CSA program (among the farmers interviewed) charges $25 per week for their CSA and estimate that an average week provides 10 lbs. of produce to their customers. This represents $2.50 per lb.

Branding and Marketing

Labelling is essential to certified organic, and (depending on the product) branded and innovative packaging can be critical. Certified organic packaged goods are almost always clearly marked as such. Loose produce is typically shelved in an "organic" aisle or basket, with signage and PLU stickers describing the products as organic. Key organic labels in California include the USDA and CCOF Organic logos.

CCOF has developed a separate logo for transitional products; only [CCOF Certified Transitional]operations may use this. Product sold as CCOF Certified Transitional must include the statement "CCOF Certified Transitional" on product labeling. An operation may not use "organic" to modify the word "transitional" on a front label, on signage, or on other marketing information.

Often mentioned is the possibility of developing regional identity on the basis of organic production, but most regions produce a large number of crops, making it hard to create a crisply focused identity.

Additionally, it may be difficult to align growers around a specific goal. For example, is it to produce organic foods or high-quality foods? Does an organic tomato from the region have meaning that is resonant with consumers? Does an organic potato have a similar meaning?

Using organic production as a way to get to higher quality might be a useful approach, but consumers' associating organic with quality is different than their associating a region with quality. If another region focuses on organic production, these regions are then competing in the organic market instead of creating a market niche for each region (Christensen, et al., 2015).

Brands such as Driscolls (berries) and Earthbound Farms (mainly salads, although with a diversity of options; acquired by White Wave) showcase how great branding can add tremendous value to the organic produce sector. Both of these companies have become household names, and are available in almost every grocery store. They both source nationwide and even internationally. This sourcing strategy is important to ensure they have year round supply, and can effectively hedge against risks in a single region.

These two brands – two of the most successful – do very little to focus on locality or geography of their sourcing strategy. This suggests that regionalizing organic as part of a brand (and therefore diversifying the products under the brand's umbrella) is likely to be a very challenging strategy.

Distribution Landscape

Based on the local project leader's meetings with a Sacramento organization that distributes to food to the entire West Coast, this organization emerged as the most likely candidate to pick up product from farmers. (Note that NVA has had no contact with the organization and cannot verify the following data.)

The hunger relief organization is currently sending four 48 foot refrigerated trailers through Northern California weekly. These trucks are ~40% full on their outbound trip, and empty on their return. The organization would welcome the opportunity to support distribution for clusters through backhauls and other strategies. It currently costs them $3.20 per mile to operate their trucks.

Additional potential logistics partners were not engaged but if the cluster efforts are pursued further, companies to engage include Veritable Vegetable, Capay Organics, Walker Brothers, BC Fresh, and General Produce (already described above, in the "Buyer Landscape" section).

North-south rail corridors that parallel I-5 (operated by Union Pacific and Burlington Northern Santa Fe) were originally going to be considered as part of the distributions strategy. As the project evolved and began to focus exclusively on clusters like organic vegetables that have relatively low volumes, a rail strategy between Shasta and Butte Counties and Sacramento became less relevant.

Competitive Landscape

As described above, demand for organic produce outstrips supply. As such, despite the fact that competition exists in the organic vegetable space, growers in Shasta, Butte and Tehama Counties are unlikely to have any problems selling their goods as long as they are able to price their products on par with other organics.

Key competitors would come in the form of large scale, industrialized organic growers and distributors (including food hubs) with a focus on organic.

As described above, Northern California – and Shasta, Butte and Tehama Counties in particular – represent a miniscule amount of organic production in the state.

As such, the main challenge organic vegetable cluster growers are likely to face is whether they can compete on price with organic vegetables from more concentrated production areas across the state. The largest 2% of farms in California, those grossing more than $500,000 dollars, claim about half of the total gross sales. Farms with gross sales between $165,000 and $500,000 (5% of all farms) received another 25% of the total gross sales.

Note that of California's total vegetable production, an estimated 8% is certified organic.

Additionally, depending on how a cluster is structured, including its primary targeted buyers and geographic focus, all of the distributors described above also pose competitive threats.

Because land and transportation are important drivers of produce costs, an organizational cluster with support from county and state agencies could help producers secure well-located land at affordable costs, allowing them to decrease their cost structure and improve their position against competitors.

Pricing Trends

Organic producers typically receive a price premium to account for the increased costs of organic production. However, the premium can and does vary greatly depending on the weather, crop type and other demand factors such as the overall economy. Therefore, while price premiums are the main reason farmers make the transition to organic, they are also the biggest risk involved in the decision to transition.

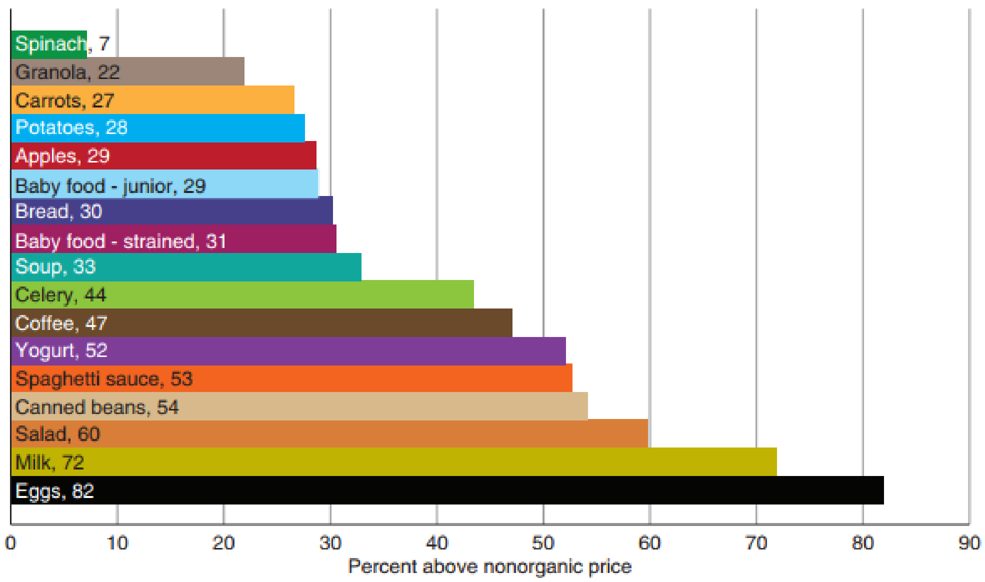
In fact, knowledge of whether they will receive sufficient premium to cover increased costs of production is a key barrier to farmers converting from conventionally farmed land to organic (Carlson & Jaenicke, 2016). The following table illustrates the average wholesale premium paid for organic vegetables over conventional vegetables during 2012-2013, at markets in Atlanta and San Francisco, calculated from USDA terminal market data.

On average during these two years, organic secures a significant premium – more than 100% over conventional, although it is interesting to see that Atlanta (and other largely East Coast terminal markets) have a much higher premium for organic than does San Francisco. Additionally, the variation in premiums is much greater in San Francisco than other markets, with certain crops in the list (lettuce, cauliflower, onions, artichokes) securing a negative premium for organic versus conventional at specific points in the year. This suggests that the San Francisco market may in general have better access to organic than other terminal markets, and can be oversupplied at times.

	San Francisco			Atlanta		
Commodity/Pack	**Conv**	**Org**	**Premium**	**Conv**	**Org**	**Premium**
Artichoke (SF only) cartons, 24s	$25.75	$33.51	38%			
Carrots 25 lb. sacks loose	$7.84	$23.24	198%	$12.03	$26.76	126%
Cauliflower cartons, film wrapped, 12s	$16.11	$26.62	83%	$20.44	$40.05	97%
Greens cartons bunched, 24s	$8.50	$23.46	51%	$25.34	$36.16	42%
Lettuce cartons, 24s	$33.50	$56.35	153%	$38.56	$82.34	244%
Mesclun Mix 3 lb. cartons	$5.34	$6.19	16%	$7.82	$17.39	123%
Onions, Dry 40 lb. cartons, JBO	$22.94	$28.96	19%			
Potatoes 50 lb. cartons, US #1	$12.74	$36.25	236%	$16.37	$48.76	223%
Spinach cartons, bunched, 24s	$15.04	$39.24	167%	$21.47	$42.11	92%
Sweet Potatoes 40 lb. cartons, US #1	$24.89	$35.71	37%	$19.40	$36.47	88%
Tomatoes, Cherry Flats 12 1/2 pt cups with lids	$24.76	$40.36	163%			
Tomatoes, Cherry No flats 12 1/2 pt cups with lids				$14.76	$34.98	112%
AVERAGE	**$17.27**	**$31.81**	**106%**	**$20.18**	**$41.25**	**128%**

A 2010 study from the USDA Economic Research Service (ERS) confirmed strong price premiums for organic, but suggested that they are significantly lower than premiums calculated through terminal market pricing. Premiums ranged from 7% (for spinach) to 60% (for salad greens).

Organic price premiums, 2010



Notes: Bars depict the size of the relative price premium for each product in 2010.
Source: USDA, Economic Research Service estimates from Nielsen Homescan data (2010).

Finally, a 2015 Consumer Reports survey on organic prices further illustrates consistent price premiums received by organic product, with retail premiums ranging from 0% to 303%. (Consumer Reports 2015)

Table 1	Amazon Fresh	Fresh Direct	Harris Teeter	Peapod
Carrots (baby, lb.)				
Regular	$1.99		$1.69	$1.66
Organic	$1.99		$1.69	$2.49
% difference	0%		0%	+50%
Iceberg lettuce (head)				
Regular		$1.99	$1.79	$1.79
Organic		$1.99	$2.69	$2.99
% difference		0%	+50%	+67%
Zucchini (lb.)				
Regular	$2.00	$0.99	$0.62	$0.99
Organic	$2.89	$3.99	$1.31	$2.00
% difference	+45%	+303%	+111%	+102%

Table 2	Price Chopper	Safeway	Walmart	Whole Foods
Carrots (baby, lb.)				
Regular	$1.33	$2.19	$1.68	
Organic	$1.99	$2.19	$3.48	
% difference	+50%	0%	+107%	
Iceberg lettuce (head)				
Regular	$1.99	$2.79	$1.68	
Organic	$3.49	$3.29	$2.48	
% difference	+75%	+18%	+48%	
Zucchini (lb.)				
Regular	$1.99	72 cents	$1.80	
Organic	$2.99	$1.12	$1.98	
% difference	+50%	+56%	+10%	

Synthesis and Potential Models

Mapping of Players

[MAP REDACTED TO PROTECT CONFIDENTIALITY OF STAKEHOLDERS]

The following table illustrates the cost of picking up product from potentially interested farms and distributing that product into the Sacramento warehouse of one organization interested in providing pickup and delivery services at $3.20 per mile.

	If Truck Is Full	If Truck Is Half Full	If Truck is Quarter Full
Pallets / Truck	26	13	6.5
Cases Per Pallet	35	35	35
Cases / Truck	910	455	227.5
Lbs. Per Case	30	30	30
Lbs. / Truck	27,300	13,650	6,825
Cost Per Mile	$3.20	$3.20	$3.20
Total Miles	310	310	310
Cost Per Trip	$992	$992	$992
$/Lb. (To Deliver to Sacramento)	$0.04	$0.07	$0.15
$/Case (To Deliver to Sacramento)	$1.09	$2.18	$4.36
% of Average Case Price	3%	7%	14%

Cost of distribution from farm to Sacramento that is 3%-14% of terminal market pricing may be very reasonable (when comparing this to nationwide trends for food distribution costs), especially if Sacramento is (or at least is close to) the final point of sales.

At a cost of $3.20 per mile, this organization could be a great strategic distribution partner if and when a cluster is developed.

However, if product is being moved from Sacramento down to Central and Southern California markets, which could increase total distribution costs to two or more times the amount reflected, this may become more challenging.

Basic Economics

A cluster's viability is based on how well it meets the economic needs of all players involved – growers, distributors, buyers and the cluster itself (which will cost money for management, marketing, and other systems and overhead).

The following table provides a basic assessment of the economics of a cluster, across three difference pricing scenarios:

- Scenario 1: Avg. price per pound for organic crops at SFO terminal market (as described above)
- Scenario 2: Price per pound equivalent to a 50% premium above average conventional SFO terminal market pricing (as described above)
- Scenario 3: $0.15/pound, pricing quoted to one organization for product

The table below starts with an assumed price per pound (based on the above three scenarios), and then calculates (1) the payment per pound the cluster would receive to cover its own overhead and costs, based on a low case margin of 15%, (2) the revenue per pound that he distributing organization would receive for its services – assuming trucks were half full, and (3) the price per pound that growers would receive after subtracting out the margin and distribution costs from the price per pound received in Sacramento.

The table then goes on to provide the revenue per acre the grower would be able to secure, based on the calculated price growers would receive per pound.

The second half of the table is a high level economic assessment of the cluster itself. Operating a cluster takes resources, including staffing to oversee operations and execute on sales, marketing and technology budget, insurance, etc. In order to be economically viable, the cluster would have to generate enough revenue (through its "case margin," estimated at 15% below) to cover its costs. The bottom of the table therefore illustrates the amount of throughput a cluster would have to move in each of the scenarios, in order to breakeven, or cover its fixed costs.

	Scenario 1	Scenario 2	Scenario 3
Price per Pound in Sacramento	$1.05	$0.86	$0.15
Margin per Pound to Cluster – assumes 15% of price in Sacramento to pay for cluster coordination services	$0.16	$0.13	$0.02
Distribution Cost – assumes trucks are half full	$0.07	$0.07	$0.07
Price per Pound to Growers – calculated from above	$0.82	$0.66	$0.06
Grower Revenue per Acre – assumes 11,000 lbs. yield/acre	$9,048	$7,304	$633
Estimated Annual Fixed Costs To Run Cluster	$85,000		
Staffing	*$50,000*		
Marketing	*$25,000*		
Technology	*$5,000*		
Other	*$5,000*		
Annual Sales Required To Cover Cluster Costs	$539,683	$656,244	$3,777,778
Acres Required To Generate This Sales Level	46	69	2,289

While there are many assumptions in the above assessment that must be vetted further, the directional insights are extremely important.

First, across all scenarios, the revenue per acre is low for small to mid-sized growers of organic produce, who are typically seeking $10,000 to $22,000 per acre in revenue.

However, *if* a cluster could find growers who want to expand their acreage and are willing to do so for a guaranteed $7,300 to $9,050 per acre, and it can receive organic (or even 50% above conventional) terminal market pricing for its goods, there is potential for the cluster to work with these growers. Additionally, with pricing scenarios 1 and 2, a cluster could breakeven by selling and moving 46 or 69 acres. While this acreage level is not currently available, it seems feasible for the region to build this base of organic production over time.

If the cluster is receiving $0.15 per pound, as one interview indicated was expected, the economics are extremely challenging for growers and for the cluster itself. It is highly unlikely that this scenario could be viable without significant outside subsidies.

On September 14, 2017, NVA received input from the local project leader that they are exploring an alternative approach, in which organic vegetable growers would be paid 28% of the average supermarket cost of a basket of organic vegetable items. This product would then be delivered to San Diego markets. The project leader asked NVA to conduct additional analysis on the economics of this model, to determine if it would be viable.

It is important to note that this strategy of setting prices with small to mid-sized growers in such a way that it is tied to the USDA's reported historic supermarket pricing trends is not a standard approach. Additionally, the spread between farm-gate pricing and supermarket pricing (which the USDA recently analyzed to be 28% for vegetables) is typically considered extremely low for small to mid-sized farmers. The spread reflects the pricing structure of massive, industrial farming, and also assumes that the sorting and packaging of crops is done separately from the farm (by a packer). As such, the subsequent analysis adds a step to the supply chain which was not assumed in the above scenarios.

- *Average retail price per pound for a basket of organic vegetables:* Based on a review of a sampling of 2016 and 2017 analyses conducted by the USDA bi-weekly (Advertised Prices for Specialty Crops at Major Retail Supermarket Outlets), the average price per pound for a basket of organic vegetables in the Southwest is $1.35. The crops included onions, potatoes, broccoli, carrots, celery, greens, peppers and tomatoes.
- *Average price to growers:* If growers received 28% of this amount, they would receive $0.38 per pound for their organic produce. This results in an average revenue per acre of $4,158. Again this revenue per acre is very low for a mid-sized farmer with up to 50 or even 100 acres. In most projects NVA has conducted previously, growers are looking for at least $10,000 per acre for *conventional* crops into wholesale markets. Those with a strong existing direct-to-consumer business typically generate up to $18,000 per acre for conventional and $22,000 per acre for certified organic. These trends are reinforced by farm financial benchmark studies, including a 2012 analysis by Iowa State University (Selected Alternative Agricultural Financial Benchmarks, conducted by Craig Chase). Any further exploration of this model should therefore first formally survey the growers that the cluster plans to work with to confirm whether or not they are willing to accept these low prices in exchange for guaranteed purchase.

- *Sorting and packaging:* Packaging and labels are estimated at $0.10 per pound. Labor for sorting, packing and loading is estimated at another $0.06 per pound. These are based on input provided directly from food hubs and produce distributors nationwide.
- *Average price for distribution:* A round trip from Redding to Burney (where the farther identified farm is located), and then south to San Diego, is 815 miles. At $3.20 per mile, this is $2,573 per trip. A half-full truck can move 13,650 pounds of produce. This results in a distribution cost per pound for a half full truck of $0.19.
- *Pricing in San Diego*: San Diego does not have a terminal market where the USDA tracks market pricing. Instead, terminal market pricing for Los Angeles was analyzed. It is helpful to note that in general, terminal market pricing in Los Angeles, including for organic vegetables, is below San Francisco's pricing. For the same basket of organic produce items described above (onions, potatoes, broccoli, carrots, celery, greens, peppers and tomatoes), LA's terminal market pricing is $1.27 per pound.
- If the cluster is able to secure the above pricing across the supply chain, this would leave $0.54 per lb. for the cluster itself.

The following table provides a summary.

Breakdown By Pound of Organic Produce	
Price Per Lb. to Grower	$0.38
Equivalent Revenue Per Acre to Grower	$4,180
Sorting, Packaging and Labeling Cost Per Lb.	$0.16
Distribution Cost	$0.19
Margin to Cluster	$0.54
Terminal Market Price	$1.27
Fixed Costs Analysis for Cluster	
Estimated Cost to "run" a Cluster	$85,000
Staffing	*$50,000*
Marketing	*$25,000*
Technology	*$5,000*
Other	*$5,000*
Sales Required To Cover Cluster Costs	$199,907
Acres Required To Generate Sales	14.31

If the cluster is able to secure small to mid-sized growers of organic produce that can accept such low pricing ($0.38 per pound, or $4,180 per acre), then the above economics would lead to a cluster that is highly profitable, because it would maintain an extremely high gross margin of 42%.

Again, based on NVA's prior experience, this strategy is unlikely to be successful because small to mid-sized farmers who are used to receiving $1 per pound or more through direct sales to consumers and wholesale buyers would be unwilling to adopt such a low pricing structure. This strategy could be worth pursuing further, if the cluster is able to line up growers whose cost structures are so uniquely low (perhaps by using volunteer labor or gaining access to reduced-cost land) that they are willing to accept these low prices.

Reflections on Opportunities and Challenges

The work to date suggests that there are several very important areas of research to pursue before a decision is made if and how to move an organic vegetable cluster forward.

- How well do organic vegetables grow in Butte, Shasta and Tehama counties? How does it compare to other potential crops (conventional or organic), including fruit trees, tree nuts, and grains? How much volume could be produced through hoop house and greenhouse production, which could be supported by a company like Emerald Kingdom Greenhouses? This is best researched through direct engagement with farmers who can provide insights, as well as input from UC Davis. Once collected, this information will enable the team to determine if it can make a strong economic case to growers as to why they should invest in transition to organic vegetables.
- Who will be the cluster's main buyers – retailers, broad line distributors, wholesalers, institutions, etc.? Where are they located – Sacramento, Southern California, Bay Area, etc.? What will be the distribution costs of bringing product to these locations? What prices do these buyers typically pay for organic vegetables? From whom are they currently procuring organic vegetables, and produce in general, and how well could a cluster compete?
- A formal, group meeting among interested growers is critical, including [redacted]. Through this engagement, the team must better understand their interest levels and concerns about transitioning to more organic vegetables, requirements related to pricing and revenue per acre, food safety practices, ability to meet the quality and consistency demands of buyers, what crops they can grow, etc. During these discussions, it will be important for the team to build out a forecast for anticipated annual organic vegetable production going forward and a specific set of crops they are likely to grow.
- Redacted to protect confidentiality of stakeholders

While the results of the above research are critical to making final decisions on how to move forward, it appears that there are gaps and needs, which an organic vegetable cluster can help meet.

The rest of this section describes the important services a cluster can provide to meet grower and buyer needs. <u>This does not mean the report is recommending the team move forward with cluster development</u>, as its financial viability is still unknown. Executing on these services is resource intensive. The Basic Economics analysis above estimates that a cluster will require $85,000 in fixed costs to run; however, depending on how it is developed, this may be much higher. Subsequent economic analysis should develop a more comprehensive and accurate assessment of the fixed costs of running a cluster. Once these are fleshed out, and better information is gained on product pricing, a more complex economic assessment should be conducted to determine if the cluster should be developed.

Most importantly, a cluster must encourage, support and perhaps even incentivize growers to transition into organic vegetable production. This is because lack of organic vegetable production is the single most concerning issue related to creating an organic vegetable cluster in the region. There are 50 acres of organic vegetables across the three counties, and primary research identified 12 existing acres in production (of which some is with growers who are uninterested in selling beyond hyper local markets). While an additional 100 acres could come on line, it is not yet clear if new production would be in organic vegetables or other crops. The cluster can do this by providing economic rationale for the transition, provide technical assistance and group certification support, and build the consistent and high paying markets that will make the transition an easy sell. A cluster may also want to bring in an outside resource like Farmland LLP to help fund growers making the transition to organic. As part of this set of resources, a cluster should also help growers become wholesale ready – instituting optimal post-harvest, grading and packing steps required to meet the needs of big buyers.

Second, a cluster must establish a base of committed buyers willing to pay the pricing levels growers need to receive. The cluster would serve as both a sales force and account managers, and would match sales with anticipated production on a week to week basis. An effective cluster would also facilitate pre-season crop planning, to help ensure producers are growing the right crops for the market.

Third, a cluster should oversee logistics, helping a partnering (or an alternative distributor if one is brought on) coordinate routes and pickup days between distribution and growers, and organizing this in a way that maximizes the volume of produce on each route. One way that a cluster can help make the economics of distribution more effective even in early years, when organic vegetable production is so limited, is to coordinate pickup for other commodities as well – fruits, tree nuts, dairy, etc.

Finally, a cluster can help manage the flow of funds, taking payment from buyers and paying out distributors and producers.

If the local team pursues organic vegetable cluster development further, these steps should be taken with a full understanding of the current and future plans of the nonprofit already exploring this cluster model, and a thorough assessment of the viability as of their efforts (as an operator, partner and/or potential competitor).

[REFERENCES TO ORGANIZATIONAL NAMES HAVE BEEN REDACTED TO PROTECT CONFIDENTIALITY OF STAKEHOLDERS]

Ultimately, although adequate research was not conducted to make a concrete recommendation for how to move forward, this report does encourage SRTA to begin having direct conversations with the organization that has expressed the ability and willingness to provide backhaul services across the state. These services can be extremely valuable, and could enable farmers of all types across Northern California (not just organic vegetables) to get their product to new markets. This organization did not respond to requests for a meeting from the research team, so all information presented in this report on their willingness to engage and price points are anecdotal. As such, SRTA should set up a meeting directly with the organization's CEO to confirm their interest in partnering to move agricultural product, their price point, and clarify their role. If this discussing is promising, the next recommended step is to determine an operator, whose role would be focused on sales, account management, managing transactions, and coordinating with growers on supply, orders and pickup. It is possible that the organization itself is actually well positioned to play this role, and could therefore serve as both the distributor and the operator. If an alternative organization is pursued as a potential operator, SRTA should engage all stakeholders (operators, distributors, buyers, growers, nonprofits, etc) as part of a single, collective discussion. This approach is essential to ensuring clear, consistent communication, and a shared understanding of the strategy and facts.

Wild Rice

Wild rice is not technically a type of rice, but instead a tall, aquatic grass that holds the distinction of being the only cereal grain native to North America. It's a summer annual that typically grows in man-made, flooded fields, or paddies. The grain was traditionally grown around the lakes of Minnesota and Canada by Native American tribes, who would harvest the flooded fields by canoe.

Agricultural Production Trends

With the advent of cultivated rice production, wild rice grew as an industry and took root in Northern California. California is now the top wild rice producer in the world. Combined with Minnesota, the two states represent 99% of the country's wild rice production (California Wild Rice Advisory Board n.d.). The remaining 1% is grown in Oregon, Idaho, and Wisconsin. While Minnesota has more acreage (nearly double), California has higher overall production volume. In 1995, Minnesota had about 17,000 acres in production while California had just below 9,000.

For California, the rapid ascent to the top of the wild rice market took only a few decades. A relatively young industry in California, wild rice has been harvested by hand for generations by the tribes of Minnesota. According to industry lore, in the 1970s, a friend brought two ice chests full of wild rice seed to Vince Vanderford, a California rice farmer. Curious, Vanderford decided he would plant the new seeds as an experiment. What started with zero acreage, transformed into 11 million finished pounds of wild rice from 16,000 acres of cultivated land in under 30 years. From Vanderford's first planting in 1977, it took California only 10 years to surpass Minnesota in production. Acreage went from 2,400 acres in 1982 to nearly 16,000 in 1985 (California Wild Rice Advisory Board n.d.).

Today, California wild rice is grown in three distinct regions: the Sacramento Valley, which is rich in conventional rice production; areas around Lake County; and, the northeast corner of the state in present day Shasta and Modoc counties. These two counties – Shasta and Modoc – represent nearly 90% of California's production and thus are the top producers of the natural gourmet product in the world.

Acres Harvested

County	2002	2007	2008	2012	2013	2014	2015	Growth Rate ('08-'12)	Growth Rate ('12-'15)
Butte	731	1,050		0					
Lassen	170	480	168	1,709	2,109	1,579	1,460	917%	-14.6%
Modoc	4,750	3,921	n/a	4,698					
Shasta	4,100	5,500	4,455	5,700	5,700	5,600	5,500	28%	-3.5%
Sutter	3,245	2,871	4,455	1,100			1,350	-75.3%	22.7%
Yolo		3,940	4,340						
Yuba									
State of California	**7,515**	**14,100**	**16,358**	**12,010**			**8,960**		

Sources: https://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/California/cav1.pdf; County Crop Reports

Of the many victims of the 2008 global financial crisis, wild rice experienced its own market crash. Demand for U.S. exports of wild rice fell 44% from 2008 to 2009. Farmers across the northern part of the state converted to more production of the crops they typically rotate with wild rice. And, California was not alone. Minnesota farmers saw wild rice acreage fall from 18,000 in 2008 to 10,000 in 2010.

The result was that many farmers, especially in the Sacramento Valley, appeared to turn away from wild rice and instead converted to other crops. In previously prolific counties, such as Butte and Yolo, wild rice production screeched to a halt.

The crop made a comeback in stronger economic times. Where some have abandoned wild rice, others have returned and new producers have sprouted. Shasta and Modoc remain the locus of production power, but Sutter County has slowly regained its footing, and Lassen County, that had little wild rice production before the economic crash, is now a major player in the region.

Note that while production in Shasta County dropped slightly by 100 acres harvested from 2014 to 2015, it rose again by 300 acres in 2016 (5,800 total acres harvested). Many wild rice growers are also ranchers who can quickly divert low lying pasture land to Wild Rice.

The following tables illustrate average farm sizes and production levels in the state from 1997 to 2012 (USDA Davis Regional Office 2015). The average size of operation in California is 264 acres, and the average size of producer in Shasta County is 271 acres. This indicates that most wild rice producers in California are mid-scale. Modoc County is home to Altura Ranches, a farm with 2,700 acres of wild rice, the largest planting in the world.

Production Volume (in CWT)

County	1997	2002	2007	2012	% Growth 2007-2012
BUTTE	11,594	11,326	17,181	-	-100%
COLUSA			-		--
LAKE		-			--
LASSEN		-	-	8,240	--
MODOC	-	63,410	60,642	86,528	43%
SHASTA	9,832	24,665	71,179	102,616	44%
SUTTER	6,548	37,128	62,528	3,535	-94%
YOLO		38,178	65,812	-	-100%
YUBA			3	1	-67%

Number of Operations with Acreage Harvested

County	1997	2002	2007	2012	% Growth 2007-2012
BUTTE	8	4	6	2	-67%
COLUSA			2		-100%
LAKE		2			--
LASSEN		3	2	5	150%
MODOC	7	7	8	6	-25%
SHASTA	6	18	16	19	19%
SUTTER	8	10	12	5	-58%
YOLO		10	12	2	-83%
YUBA			3	1	-67%

Average Size of Operation

County	1997	2002	2007	2012	% Growth 2007-2012
BUTTE	227	183	175	-	-100%
COLUSA	--	--	-	--	--
LAKE	--	-	--	--	--
LASSEN	--	-	-	87	--
MODOC	-	679	490	783	60%
SHASTA	132	100	319	271	-15%
SUTTER	170	347	313	53	-83%
YOLO	--	282	354	-	-100%
YUBA	--	--	476	-	-100%

Nine of the state's 40 growers (23%) are certified organic. Two of these growers are in Shasta County (USDA Davis Regional Office 2015).

Economics of Wild Rice Production

Below is an example income statement for a wild rice farm. The input prices were borrowed from two reports and then combined to present a higher cost, more conservative income model. Acreage and average farm size is drawn from above data (with Alturas Ranch excluded as an outlier). Yield is assumed to be 1,350 pounds per acre based on a range of yields that cited by the California Wild Rice Advisory Board, which claimed that California wild rice farms harvest between 1,200 and 1,500 pounds per acre (with the potential to reach 2,000 pounds per acre). (University of California - Co-operatative Extension 2005)

Item	Cost/Acre	Total Costs (175 acres)	Total Costs (350 acres)	Total Costs (700 acres)
Site preparation (diking, leveling)	$100	$17,500	$35,000	$70,000
Field preparation (disk 2X)	$10	$1,750	$3,500	$7,000
Seed (150 lbs initial + 50 lb/yr @ $1 per 1b)	$80	$14,000	$28,000	$56,000
Broadcast seed	$5	$875	$1,750	$3,500
Fertilizer (150 lb urea @ 120 + $4 appl)	$22	$3,850	$7,700	$15,400
Bird Control	$25	$4,375	$8,750	$17,500
Combine	$75	$13,125	$26,250	$52,500
Haul	$10	$1,750	$3,500	$7,000
CA Wild Rice Program Assessment Fees	$8	$1,400	$2,800	$5,600
Wild Rice Cooperative Annual Fee	$1	$175	$350	$700
Total variable expense	$336	$58,800	$117,600	$235,200
Processing costs (1350 lb @ 50 cents)	$675	$118,125	$236,250	$472,500
Total Costs	$1,011	$235,725	$471,450	$942,900
Income (1350 lb @ $1.35)	$1,823	$318,938	$637,875	$1,275,750
Net Income	$812	$83,213	$166,425	$332,850

This analysis suggests that at $1.35 per lb. to the grower, the economics of wild rice are favorable.

This is particularly true given that wild rice can be a complementary crop for many farmers, enabling them to use land that may not be able to be cultivated for other revenue generating crops.

Regional Competitive Advantage

California's wild rice ascent and now dominance is aided by favorable climate conditions, better suited to higher yield production than the conditions in Minnesota. Due to the long, dry summers and mild winters, seeds that originated in Minnesota experienced an evolution of sorts in California. First, the long Northern California summer days with limited rainfall result in higher yields and fewer diseases for the crop. Too much rain during the growing season results in shattering, a natural seed-dispersal process where some kernels mature too fast and fall from the plant before harvest. Those seeds are lost in the flooded fields, depressing yields. The dry summer season in California means that those kernels stay on the plant longer. Fewer complications from pests and diseases also boosts the plant's recovery rate in California.

Another unintended yet positive consequence of the warmer climates is that California wild rice farmers need to reseed their plant annually. Unlike in the upper Midwest, California's post-harvest seasons don't provide enough chill for wild rice seeds to break dormancy and naturally germinate in the spring. Instead, California farmers must store their wild rice seeds in refrigerated water during the winter months to mimic the natural process of seeds lying at the bottom of Minnesota lakes in winter so the seeds can germinate on time. While expensive, this process allows for a more controlled crop. Buyers know what they're getting on contract. The other advantage is that it reduces shattering and the inevitable overcrowding of seed and plant that occurs as more seed remains in the paddies each year.

Proximity to the plentiful waters of the Sierra Mountains and the presence of a thriving conventional rice market further solidified California's competitive advantage. That water flows into an existing, sophisticated network of dams and irrigated ditches that help control and distribute water across the region's farmland.

Cultivation and Processing

Both wild rice and conventional rice share similar groundwork and planting processes, making it easy for California farmers to transition between the two crops. It also helps that wild rice has a shorter growing season (80 days to mature as opposed to 140 for medium grain rice). This means that if there are any weather peculiarities in a given growing season, farmers can adapt and start wild rice at a later date while still benefiting from the growing season.

Wild rice seeds take root in the spring, and harvest in the late summer or early fall season. In May and June, after the winter rains dissipate, farmers flood their fields to about 8-10" depth and sow seeds by air. As the seeds germinate, leaves begin to grow and break the surface of the water. During late June and early July, leaves protrude and float on the surface of the water. Finally, greenish-brown stalks 3-4 feet tall protrude above the water signifying the end of the growing season. Fields are drained two to three weeks before harvest, allowing the soil to dry so that mechanical combines can collect the crop before sending it out for processing.

After harvest, the kernel is greenish brown in color and full of moisture. The high moisture level (around 40%) means the wild rice needs to be processed before it's sold to market. Processing reduces moisture content and therefore increases the shelf life of the finished product. That high level of moisture also means that the crop is vulnerable to mold growth and thus needs to be moved to a processing plant within 48 hours or kept in cool storage until it's ready for processing. (Noel, et al. 2001)

Another advantage for the region – which is a disadvantage for other crops – is the presence of clay soil. Clay and hardpan soils with thin topsoil retain more water whereas other soils leach water out. Wild rice can therefore be planted in places like Northern California and Oregon, in land that is typically not very suitable for other crops.

To complete the cycle, farmers must ready seeds for next year's harvest.

Cold water storage is needed for the seeds during the winter months, so they can germinate again the following spring. Farmers need to anticipate demand the following growing season in order to determine how much seed they want to place in storage.

In 2012 the De Wit Family Farm explained that they might grow anywhere from 800 to 2,500 acres of wild rice in a given year, fluctuating based on anticipated demand. Once the amount is determined, the seed is collected from the field and shipped in steel bins to Yuba City where it is placed in cool storage through the winter.

Commercial processing is done in a processing plant and involves a few additional steps: curing, scarification, cleaning, grading, and packaging. These steps are necessary to ensure the final product is of satisfaction to the wide variety of customers it will reach in the marketplace. For example, the scarification process, which scratches the bran on the kernel to create aeration and greater ease for water entry, allowing for a quicker cooking time that satisfies consumers.

Processors then use a thorough grading system to separate the kernels according to color, scarification, and size, which allows the processor to offer a consistent product according to customer specifications.

Much of the equipment that is used to cultivate California's 550,000 acres of conventional rice can also be used to cultivate wild rice. For example, the mechanical combines used in rice cultivation are also used for wild rice.

Wild Rice Producers and Processors

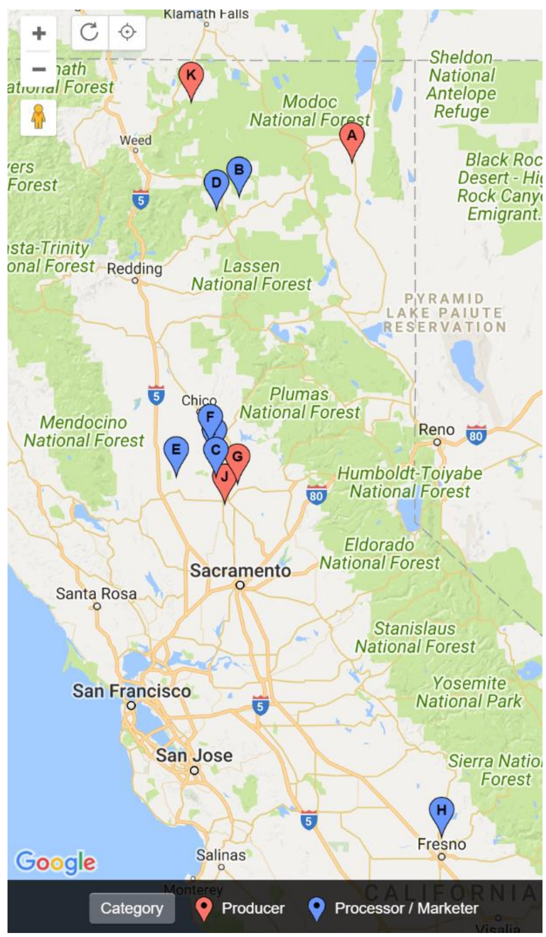
The following table outlines the main wild rice producers and processors in the region, and potential implications and opportunities each might have in the development of a wild rice cluster. Note that because wild rice production has a strong presence across the entire Far Northern California region, counties outside Shasta and Butte are represented here. Additionally, per data in the above Agricultural Production section, the region is home to 40+ wild rice farmers. The vast majority are not identifiable, as they do not market their product. As such, the table lists players in the wild rice supply chain who have some public presence.

Entity	Type	Location	Description
Alturas Ranches	Producer	Alturas, CA; Modoc County	Said to be the largest wild rice grower in the world with 2,700 harvested acres. Majority of product sold through commercial outlets, they harvest a small batch sold to customers at the Ranch. Grow and sell both conventional and certified organic wild rice.

Entity	Type	Location	Description
Fall River Wild Rice Growers Cooperative	Processor, Marketer	Fall River Mills, CA; Modoc County	Offers seed, processing and market access to growers, and even for a while provided those services to growers in Oregon. Walt Oilar is GM of the co-op, which has been in his family for two generations. The co-op is owned by 28 small rice growers and it appears that the co-op processes wild rice to be branded and sold by its farmers *and* wild rice branded under the co-op's name. Products include: quick cook wild rice; fully-cooked, ready-to-serve wild rice; wild rice flour; wild rice pancake mix; chocolate bars made with puffed rice; and, wild rice chips.
Gibbs California Wild Rice	Processor, Marketer	Live Oak, CA; Sutter County	Processing plant, and marketer (of Gibbs branded product) for retail sales as well as food service and industrial/wholesale buyers.
Goose Valley	Producer, Processor, Marketer	Shasta County	Supplies wild rice to food manufacturing and foodservice customers. Appears to have a JV with SunWest, with part ownership of its wild rice processing facility. Packaging options include: Tote, 50lb, 25lb, and 5lb. Claims to be the largest grower of organic wild rice. It is headquartered in Boston and harvests between 5-6 million pounds of wild rice annually, generating more than $10 million in sales. It sells to 2,600 grocery stores across the U.S.
In-Harvest	Product developer, marketer	Colusa, CA; Colusa County	Premier developer, marketer and supplier of rice and rice blends, exotic grains, and legumes to many of the industry's top creative chefs and restaurants.
Lundberg Family Farms	Producer, processor, marketer	Richvale, CA; Butte County	Vertically integrated organic rice company with about 14,000 acres under cultivation (5,000 of its own and another 9,000 under contract). One of the pioneers in organic rice production in California (70% of acreage is organic). It sells much of its wild rice retail - locally, at places like Raley's, Safeway, and Bel Air Market. Doesn't seem to be selling product north in Modoc County.
MacDougall's Wild Rice	Producer, processor, marketer	Marysville, CA; Yuba County	Producer / cultivator, processor, and packager of certified organic wild rice.
Prather Ranch	Producer	Macdoel, CA; Siskiyou County	Example of a working cattle ranch that manages wild rice fields on their land. Their unusual practice of tilling the stubble into the soil and keeping their wild rice fields covered in water year-round earned them the prestigious 2015 California Leopold Conservation Award.

Entity	Type	Location	Description
Riviana	Processor, marketer	Manufacturing facility in Fresno, CA	Riviana is the wholly owned subsidiary of Ebro Foods, S.A., which is a large Spanish food conglomerate with a major stake in the rice sector. It is a major buyer of wild rice in California and there are concerns that its purchasing power might constitute a monopsony.
Spring Valley Wild Rice	Producer	Yuba City, CA; Yuba County	Keith and Sharon Davis and their family have been farming wild rice for over 25 years.
SunWest Milling	*Processor, marketer*	Biggs, CA; Butte County	Buyer, miller, and marketer of wild rice. The plant includes processing and packaging facilities. SunWest works with producers via participation contracts or fixed-price purchases. Claims to purchase 12-15% of the rice produced in California annually from over 300 rice producers. In 2005, the company built a parboiling and milling facility with warehousing, packing and shipping capability on 4 acres of land. This facility appears to be a joint investment with Goose Valley.

To the right is a map of the above wild rice players.



The two largest mills (Riviana and SunWest) are part of a group of 15 rice mills nationwide that have signed licensing agreements for the "Grown in the USA" logo, a move facilitated by the USA Rice Federation. The logo, developed by the Federation for use on packaging containing rice grown and packaged in the U.S. for domestic and worldwide markets, will help consumers and foodservice professionals identify and choose U.S.-grown rice. About ten years ago, these 15 mills represented nearly 70 percent of total domestic rice shipments.

Finally, the *California Wild Rice Advisory Council* is an important player in the industry. This non-profit organization was formed in 1986 and operates under the authority of the Secretary of The State of California Department of Food & Agriculture Marketing Division. The Council represents approximately 65 California farmers. The acreage assessments, paid by California Wild Rice Farmers, are used in activities including field research, nutritional research, as well as domestic and international promotion of wild rice.

Summary

NVA was not able to connect directly with wild rice growers, and by the beginning of Q2 2017, the local project leader indicated concern that despite initial interest from Jim Rickert, follow up communications were difficult, suggesting there may not be enough momentum to continue efforts in building out a wild rice cluster.

Based on largely secondary research alone, it appears collaborative efforts could address challenges producers face, including:

- **Access to natural resources.** Land and water in particular, are an important factor in growing wild rice successfully, and in spurring production expansion. A cluster could support farmers by collectively organizing them to gain access to these natural resources.
- **Technical assistance**, particularly related to sustainable wild rice production. As Prather Ranch has demonstrated, wild rice production can be executed in a way that is tremendously beneficial to the land, birds and other wild life.
- **Aggregated storage, for seeds, harvested rice, and processed rice**. This type of storage can be a challenge, given the strict moisture levels that must be maintained.
- **Distribution** between farm and processor, and potentially between processors back to farms (if farm is getting rice processed under their own private label). It is currently unclear if this is a challenge for growers, but if so, it could be a valuable service.
- **Processing and packaging** is a critical step in the wild rice supply chain. Processing facilities exist in Northern California; however, they can be challenging. Growers have to travel long distances to access these processors, processers typically market products under their own brand (stripping farmers of pricing power) and – most importantly – a small set (Riviana as well as SunWest) exert tremendous power which pushes pricing down for growers. Therefore, establishing a mill and processing facility for small, independent growers could be a tremendous value addition.
  - Input from the local project leader suggests that Fall River made a new investment along these lines that proved to be unsuccessful. More research should be conducted on this experience to avoid similar challenges if this strategy is pursued further.
- **Market and product development** can be an important value add for growers. As described above, products are typically sold under big brand names. Strengthening the power of smaller brands that represent coalitions of independent wild rice growers could provide these growers with higher prices and more market power (as they can decide if and when to sell their rice to big processers or to sell under their own brand).
  - Again, Fall River Wild Rice Cooperative has worked to establish a brand and product line. As such, if a new cluster were established, it should work in collaboration with these existing efforts.
  - Additionally, demand for wild rice appears to be growing. However, increased education among consumers and institutional buyers is critical as to how to cook with wild rice.

Though the above services could be of value, existing entities – like Fall River Wild Rice Cooperative and the California Wild Rice Advisory Board – are likely already executing (or considering executing) many of them. Because these two collaborative organizations exist, it seems that technical assistance, distribution, collective processing, and marketing/product development initiatives would ideally take place within them. As such, the team should pursue next steps related to wild rice in close collaboration with these entities, rather than thinking about developing a new, separate cluster.

Appendix A: Stone Fruit Research

What are stone fruits? The term "stone fruits" refers to fruits in which the outer flesh surrounds a shell (the pit, stone, or pyrene) of hardened endocarp with a seed (kernel) inside. Fruits within this category include peaches, plums, apricots, cherries, nectarines, and pluots.

What is the current production volume of stone fruits in Shasta, Butte and surrounding counties? How does this compare to other regions?

California is (as with most produce categories) a major supplier of the nation's stone fruits. As an example, according to an AG MRC report, in 2014 California supplied 49% of the nation's fresh peaches and over 96% of the nation's processed peaches. (53% of U.S. peaches are processed each year.) (Source)

California has approximately 128,000 bearing age acres of stone fruit production. Butte County has 1,750 (1.37% of CA's total), Shasta County has 29 (0.02% of CA's total) and Tehama has 144 (0.11% of CA's total). No other Far Northern California counties have measurable stone fruit production acreage. In total, this region has 1,922 bearing age acres of stone fruit production, representing 1.5% of the state's total.

In contrast, San Joaquin Valley counties have approximately 81,000 acres, representing 62% of the state's total.

Sutter County (in Sacramento Valley, not reflected in the below chart) is also a major peach producer, with 5,273 bearing age acres in 2012.

The main stone fruits grown in this region in terms of number of farms and acreage are peaches and plums. Butte County leads production for both of these crops, with 1,437 bearing age acres of peaches and 309 bearing age acres of plums.

The table below provides data on stone fruit production in the Northern California counties of Butte, Shasta, and Tehama alongside data from the eight counties that constitute the San Joaquin Valley. As is illustrated by the table, production in the San Joaquin Valley counties is much larger in terms of acreage and number of farms than in the Northern California counties.

Stone Fruit Production

Note: Bearing Age	Farms (2012)	Acres (2012)*	Acres/Farm (2012)	Farms (2007)	Acres (2007)
Apricots					
California Total	**595**	**9503**	**15.97**	**670**	**10683**
Butte	5	(D)	-	12	17
Shasta	3	4	1.33	4	(D)
Tehama	11	(D)	-	9	4
San Joaquin Total	**228**	**5977**	**-**		
Fresno	59	1690	28.64		
Kern	17	(D)	-		
Madera	1	(D)	-		
Merced	19	566	29.79		
San Luis Obispo	25	39	1.56		
Stanislaus	59	3,016	51.12		
Tulare	48	666	13.88		

Note: Bearing Age	Farms (2012)	Acres (2012)*	Acres/Farm (2012)	Farms (2007)	Acres (2007)
Cherries, Sweet					
California Total	**975**	**32,786**	**33.62**	**1,115**	**24,091**
Butte	**5**	**1**	**0.2**	**11**	**12**
Shasta	**8**	**6**	**0.75**	**16**	**5**
Tehama	**6**	**2**	**0.33**	**6**	**(D)**
San Joaquin Total	**322**	**11,856**	**-**		
Fresno	80	2,438	30.48		
Kern	42	5,317	126.60		
Madera	12	(D)	-		
Merced	19	411	21.63		
San Luis Obispo	6	(D)	-		
Stanislaus	93	1,888	20.30		
Tulare	70	1,802	25.74		
Nectarines					
California Total	**453**	**17,154**	**37.87**	**674**	**25,508**
Butte	**3**	**2**	**0.67**	**8**	**4**
Shasta	**4**	**(D)**	**-**	**3**	**(Z)**
Tehama	**1**	**(D)**	**-**	**5**	**(D)**
San Joaquin Total	**298**	**15,269**	**51.24**		
Fresno	153	9,713	63.48		
Kern	14	652	46.57		
Merced	11	125	11.64		
Stanislaus	14	52	3.71		
Madera	-	-	-		
San Luis Obispo	5	1	0.2		
Tulare	101	4,726	46.79		
Peaches, All					
California Total	**1,741**	**46,044**	**26.45**	**1,834**	**57,546**
Butte	54	1,437	26.61	68	1,839
Shasta	34	19	0.56	42	33
Tehama	21	142	6.76	34	169
San Joaquin Total	**719**	**30,497**	**42.42**		
Fresno	305	14,472	47.45		
Kern	37	1,010	27.30		
Merced	42	3,579	85.21		
Stanislaus	107	3,522	32.92		
Madera	14	701	50.07		
San Luis Obispo	50	71	1.42		
Tulare	164	7,142	43.55		
Plums					
California Total	**820**	**19,177**	**23.39**	**1,168**	**29,344**
Butte	**16**	**309**	**19.31**	**18**	**282**
Shasta	**13**	**(D)**	**-**	**9**	**1**
Siskiyou	**-**	**-**	**-**	**6**	**(D)**
Tehama	**16**	**(D)**	**-**	**15**	**186**
San Joaquin Total	**476**	**15,740**	**-**		
Fresno	213	6,894	32.37		
Kern	13	1,176	90.46		
Madera	3	(D)	-		

Note: Bearing Age	Farms (2012)	Acres (2012)*	Acres/Farm (2012)	Farms (2007)	Acres (2007)
Merced	4	32	8		
San Luis Obispo	10	(D)	-		
Stanislaus	17	34	2		
Tulare	216	7,604	35.20		
Plumcots, Pluots, and Other Plum-Apricot Hybrids					
California Total	**142**	**2,930**	**20.63**	**213**	**3,701**
Butte	2	(D)	**-**	**Counted Differently**	
Shasta	-	-	**-**		
Tehama	2	(D)	**-**		
San Joaquin Total	**79**	**1,705**	**-**		
Fresno	29	1,631	56.24		
Kern	1	(D)	-		
Merced	4	43	10.75		
Stanislaus	9	27	3		
Madera	-	-	-		
San Luis Obispo	6	4	0.67		
Tulare	30	(D)	-		

**Sum is underestimated due to undisclosed data (D) within the region*

In general, average acreage of stone fruit per farm is much lower in Shasta and Butte (where data are available) than in California as a whole. For example, in California the average cherry grower has 33.62 bearing age acres, while in Butte average acreage is 0.2 acres and in Tehama average acreage is 0.33 acres. Butte County is a notable exception to this for peach (Butte 26.61 acres vs. California 26.45 acres) and plum (Butte 19.31 acres vs. California 23.39 acres) production. As illustrated in the chart, California stone fruit production has decreased over last 15 years. (Source) This appears to be driven by the fact that supply has outstripped demand, leading to decreased per box prices, which in turn led to lower production levels.

More recently, production of stone fruits has been stifled by extreme weather patterns, including California's historic drought.

However, it is important to note that climate change and warming temperatures in the San Joaquin Valley (and Central Valley more broadly) are making stone fruit production vulnerable. Scientists are predicting a steep decline in winter chill hours in the region, which are necessary for production of these crops.

"Only 4% of the Central Valley is now suitable for apples, cherries and pears, all high-chill fruits that could once be grown in half the valley, according to the study. By the end of the century, it says, 'areas where safe winter chill exists for growing walnuts, pistachios, peaches, apricots, plums and cherries are likely to almost completely disappear.'" This trend is likely to affect Butte, Shasta, and Tehama counties as well over time. (Source) Trends suggest that cherry production is shifting to Far Northern California, and even further north to the Pacific Northwest because of these changing temperatures. (Source)

What are unique production, storage, processing and distribution trends related to stone fruits?
Although stone fruit crops can provide delicious fruit from June through September, most stone fruits

are native to warmer climates of the world and therefore are very susceptible to injury from low winter temperatures. In addition, because they bloom early in the spring, the flowers frequently suffer damage from spring frosts.

In Northern California: peaches are harvested between June-September, plums are harvested in June and July, cherries are harvested in May and June, and nectarines are harvested between June and September. (Source)

Once harvested, stone fruits are hauled to packing houses via trailer for short distances (fewer than 6.2mi/10km) and by trucks for long distances. Because stone fruits bruise easily, it is important to drive on the smoothest possible routes and to keep fruit shaded during any delays.

Stone fruits are typically sorted, cleaned and washed in chlorinated water for the wholesale market. For peaches, cleaning using a wet-brush is preferred to remove fuzz. At this stage, fruits are often waxed and given fungicide treatment depending on county regulations.

Many stone fruits, especially peaches, are processed at this stage. The majority of processed stone fruits are canned or frozen, rather than fresh cut, because of the short lifespan of these fruits.

What trends exist with respect to grower-shipper / pack houses of stone fruits? In the past ten years, several large stone fruit companies have either shut down or moved away from stone fruit production due to plummeting per box process and the dismantling of the California Tree Fruit Agreement. (Source)

In 2014, 10 of the top 25 largest stone fruit producers in the country were in California. All appear to be vertically integrated with packinghouses. These entities appear to produce for the fresh market (or, don’t have on-site peach canning) (Source):

Producer	County	Stone Fruit Acres	U.S. Rank	Peaches	Nectarines	Plums	Apricots	Cherries	Pluots
Gerawan Farming	Fresno	8,306	1st	X	X	X	X		
Wawona Packing Co	Tulare	6,700	2nd	X	X	X	X	X	X
Sunwest Fruit	Fresno	4,900	3rd	X	X	X	X	X	
Family Tree Farms	Fresno	4,500	5th	X	X	X	X	X	
Sun Valley Packing	Fresno	4,299*	7th	X	X	X	X		
Fowler Packing	Fresno	3,900	8th	X	X	X	X	X	
Simonian Fruit Co.	Fresno	2,251	16th	X	X	X			
WMJ Farms	Tulare	2,156	17th	X	X	X			

**Certified organic and conventional*

What demand trends exist with respect to stone fruits? Additional research must be conducted on the Bay Area’s demand and demand trends related to stone fruits. A 2013 article suggested that demand for local stone fruit is high in California (especially the Bay Area and Los Angeles), and that these markets haven’t been fully taken advantage of, so more could be done to promote and market “local” stone fruit.

At the same time, California growers are being hurt by the fact that local stone fruit has become popular in other states (such as Colorado). This increased focus on local has led to decreased nationwide demand of California stone fruits (especially peaches, which can grow well in regions outside California). (Source)

70-75% of U.S. production of stone fruits is consumed domestically with the remainder exported. Canada is the main export for California stone fruit, followed by Taiwan and Mexico. Australia and Japan began receiving California stone fruit within past several years. (Source)

In 2014, U.S. exported 234 million pounds of peaches valued at $202M. Fresh peach exports accounted for $178M (7% increase from 2013).

That same year, 298 million pounds of stone fruits, valued at $187M, were imported into the country. The vast majority of this was processed peaches, with China as the main supplier.

Appendix B: University of Tennessee Research

Locational Advantage and the Impact of Scale: Comparing Local and Conventional Fruit and Vegetable Transportation Efficiencies

Author: Charles Cate Grigsby

University of Tennessee, May 2015

Grigsby, Charles Cate, "Locational Advantage and the Impact of Scale: Comparing Local and Conventional Fruit and Vegetable Transportation Efficiencies." Master's Thesis, University of Tennessee, 2015. http://trace.tennessee.edu/utk_gradthes/3365

Study Overview

Graduate student Charles Cate Grisby conducted analysis to compare the transportation fuel usage (gallons of fuel per hundredweight of product) of distributing produce from California, Texas and Florida to Eastern Tennessee versus distributing produce grown within the region itself.

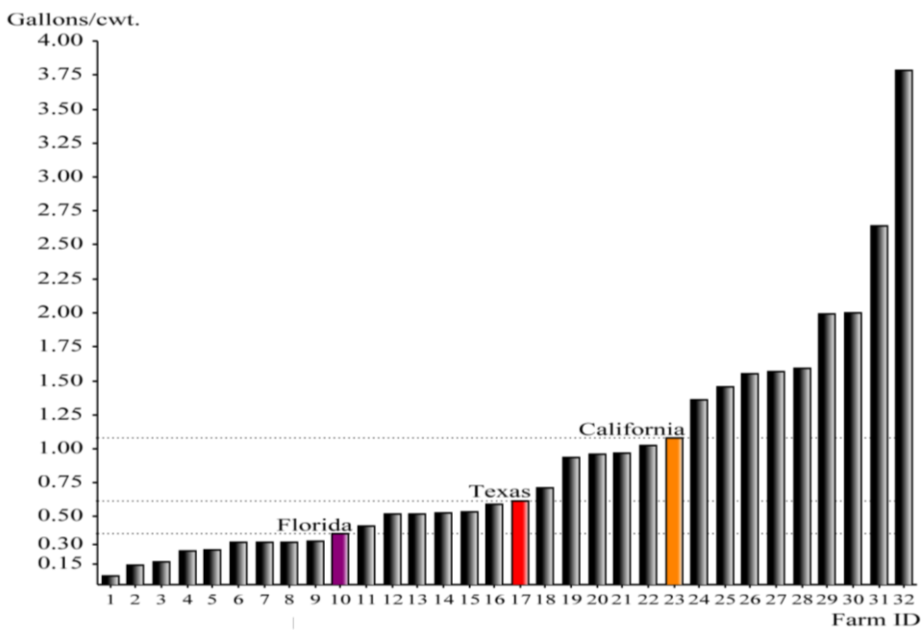
His methodology and findings are as follows.

1. **Establish a specific location within Eastern Tennessee representing the delivery point for both "conventional" and local product.**
    - *Decision: The Knoxville Terminal Market was selected, which also represents the downtown farmers market location.*
2. **Establish transportation fuel use (g / cwt) for conventional produce**
    - California, Texas and Florida were selected as origination points for conventional produce.
    - Establish transportation fuel use for conventional
        - California: 1.05 g / cwt
        - Texas: 0.60 g / cwt
        - Florida: 0.37 g / cwt
        - Notes:
            - Assumes diesel semi-trucks, which haul 39,000 lbs. of fresh produce on average, and travel at 5.7 miles per gallon.
            - Shipping distances are 2,338 (California), 1,333 (Texas) and 818 (Florida). These shipping distances represent mileage between a specific location in each of the states and the Knoxville Terminal Market. This means that any distribution of product from growers to the aggregation and/or loading docks in the three states is not considered.
    - The study's core metric (gallons / cwt) describe the total gallons used per hundredweight across the entire delivery trip. With this, we can extrapolate the following "per mile" metric that would be valuable to use in a Shasta study: *on average, conventional crops that are distributed in diesel semi-trucks take <u>0.00045 g / cwt / mile</u> to distribute.*
3. **Assess transportation fuel use (g / cwt) for local farmers in Eastern Tennessee distributing to the farmers market.** This was done by surveying and/or interviewing 29 growers to understand how they bring products to the downtown farmers market. Fifteen survey questions were asked, and included questions on growers' routes and mileage, vehicle type and model, type of

fuel required by vehicle, average pounds of produce delivered weekly, percent of unsold produce, impact of transportation on pricing and cost structure, acres in production.

- The 29 growers all had different transportation fuel uses, ranging from 0.061 g/cwt to 3.782 g/cwt. The median was 0.59 g/cwt and a mean of 0.9586 g/cwt.
- On average, local growers use <u>0.0089 g / cwt / mile</u> (20x the conventional g / cwt / mile identified above).

4. **Compare transportation fuel use between local and conventional**
    - The following graph provides a concise comparison of transportation fuel usage between conventional and local food. 31% of local growers have lower transportation fuel usage than all conventional locations, 21% are less than the Texas and California thresholds, but higher than the Florida scenario. 17% are below California fuel use threshold, but higher than Florida and Texas scenarios. Almost one-third are above all three conventional scenarios.



    - As described below, the variance in g/cwt is driven by a number of factors. The study did find, however, that farmers located at or less than 25 miles away from the farmers market (50 two-way miles) almost always have lower g / cwt than conventional distribution.

5. **Identify the key factors that drive inefficiencies in local produce distribution through several different methods, including OLS regression model and sensitivity analysis.** The primary factors identified are as follows, in order of significance.
    - Truck weight, or how much produce is loaded onto the truck: This is the most important driver of a local farm's g/cwt, and farmers should aim to maximize this number. A farmer traveling over 75 miles to market had fairly low fuel use per cwt because he used box truck and carries 1500 lbs. of product weight. On the other hand, a farmer driving just over 25 miles to market with less than 300 lbs. of produce in his pick-up truck had very high fuel usage per cwt.

        - The study found that truck weight is directly related to farm size and yields. Farmers with less than two acres consistently have low truck weights, while those with over six acres could fill larger trucks.
    - Distance: How far the farmer has to drive is the second most important component of fuel use per cwt. The longer the farmer drives, the lower his g / cwt. Again, the author found that if the farmer is 25 miles from the market (or less), he will typically have lower fuel usage than conventional produce.
        - It is important to note that the author establishes a baseline assumption that all local farmer trips to the market are round trip, direct and single purposed, i.e. farmers are not making other stops on their way to and from the market. If farmers are making these types of stops, it would add efficiencies that should be taken into account.
    - Vehicle fuel efficiency: The fuel efficiency of the vehicles played a smaller but statistically significant role in fuel use per cwt.

Implications for Shasta Study

Many people believe that "local" is inherently more sustainable because it requires fewer fuel miles. However, as the results of this study clearly demonstrate (and its literature review also highlights), this is not the case. In fact, in many cases the local, *direct-to-consumer* distribution system is far less fuel efficient than its conventional counterparts. The study found that for direct-to-consumer situations, farmers can assume their transportation fuel use (g/cwt) will be lower and therefore cheaper than conventional counterparts as long as they are only driving 25 miles away to their farmers market. However, the study also found that farmers driving farther than 25 miles can still use less fuel than conventional counterparts, if they can maximize their weight by filling up a box truck and using a reasonably fuel efficient vehicle.

For several reasons, it is likely that transportation fuel usage for any clusters developed in Shasta will be more efficient than local scenarios in the UT study, and therefore, the delivery radius to compete with conventional on fuel use will be much higher than 25 miles (or 50 miles r/t). The clusters to be further studied in Shasta would be:

- Wholesale versus direct-to-consumer, which means that much higher volumes would be moved from each farm
- Utilizing box trucks, versus many of the situations studied in the UT analysis in which farmers were using and only half filling their pickup trucks
- Designed for transportation efficiency. The cluster model would be designed to allow for efficient drop off points, and would seek out ways to have single trucks pick up from multiple farmers across a route (in contrast with the UT study, in which farmers were each individually bringing only their own farms' products to market).

Any additional analysis in the Shasta region could employ the following steps to apply the UT study methodology.

1. Understand the goal as it relates to transportation fuel use by clusters

It is important to note that the main focus for this UT research was on <u>pricing and economics</u>, and the degree to which local food pricing and cost structure is benefited by any fuel efficiencies.

The author argues that, based on his analysis, local food often has to incur much higher transportation costs, and therefore may face challenges to compete on price with conventional counterparts.

However, in most markets, local food still commands a price premium in the market and is likely to continue doing so for the foreseeable future.

It will be important for any research team to establish a goal is as it relates to transportation fuel use assessment. It may be to ensure the transportation system designed is economically viable. If this is the case, then higher fuel use among local, cluster growers may be acceptable, if their products can secure a higher price point than conventional counterparts.

Or, it may be to establish a transportation system that is as or more fuel efficient than the current conventional sourcing practices (for environmental sustainability purposes).

2. Determine the "conventional" baseline

Once the clusters are identified, it will be important to understand from where buyers are currently sourcing these products and how many miles they are typically traveling. Then the study's metric for g / cwt / mile can be applied to this distance to establish the conventional baseline (0.00045).

3. Determine the fuel usage of the two clusters identified and developed, using the baseline fuel usage formula from the study

This will require many different data points, some of which we will be driven by grower input and some of which will be determined by the strategic decisions made about how and where to distribute and aggregate products. Through grower interviews, seek to understand:

- Their acreage
- Volumes they anticipate delivering per load or drop off
- Vehicles they might utilize for product delivery
- Any ability they have to pick up from neighboring or nearby farmers and / or their willingness to have product picked up by neighboring farmers.

As the cluster business models are developed, researchers will then understand:

- Locations for sub-aggregation within the clusters (i.e. where growers will deliver their products).
- Transportation routes, and opportunities for growers to pick up from neighboring farms to maximize fuel efficiency
- Distance and strategy for distribution between sub-aggregation points and the central aggregation point in Sacramento.

This information will allow researchers to estimate the fuel usage of transporting product from farmers in each of the two clusters to the central aggregation point in Sacramento.

4. Compare transportation fuel use for conventional versus the proposed distribution plan for clusters and identify any opportunities for increased efficiencies.

Appendix C: Primary Research Tools Provided to Project Team

FAR NORTHERN CALIFORNIA

PRE SITE VISIT: INITIAL DATA GATHERING

Date: March 16, 2017

A site visit will take place at the end of April. Prior to that, Fred and other "on the ground" project members will gather key data points for the two prioritized clusters: **Wild Rice** and **Organic Vegetables**.

This document outlines the data (by grower) that the team should work to collect as best as possible over the next few weeks, as well as the data that is needed on distribution partners.

Proposed deadline to collect information on growers: April 15th

WILD RICE

Grower: Name, Address	Current farming practices: How many ag acres do they currently have? What is currently grown? Are they certified organic?	How much potential do they have to expand (in terms of acres)? Would expansion be on their land or land owned by others? Is the expansion land	What price did they receive for their wild rice for each of the last three years?	What kind of infrastructure do they have to support wild rice (cleaning, storage, transport, etc.)?	What is their interest level in a cluster? What are the main benefits they see a cluster bringing to their operation?	What are their main concerns about developing a cluster?

ORGANIC VEGETABLES

Grower: Name, Address	Describe current ag operations? How many acres in production? What is being grown? Organic? Where are products sold?	Opportunity for expansion? How many acres? Is the expansion acreage owned, leased or other?	What would motivate and encourage expansion? What does the grower need to see to motivate the expansion into "organic veg" versus other? What kind of pricing / economics for organic veg?	What kind of veg (and organic veg in particular) would grow well in your region (based on soil, weather patterns, etc.)?	What value do you think an organic vegetable cluster would bring? What services should the cluster provide?	What concerns do you have about an organic veg cluster?

DISTRBUTION PARTNERS

- Who are they?
- What goals are they hoping to achieve by being part of these clusters?
- What is their distribution infrastructure - how many vehicles, what size of vehicles, what cooler capabilities?
- Where are the located?
- What are their current routes, and ideal backhauls in particular?
- What are their storage capabilities?
- How much would they charge for distribution?

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